APPENDIX 1

MAPS AND DATABASE

A1.1 MAPPING STYLE

Over the three-decade life of the project, inevitably there was some evolution of field methods. These are only likely to be evident to field geologists who examine field traverse maps and give the matter any thought. The evolution was largely contingent on how air access to areas being mapped was achieved, keeping in mind that, at the time of mapping, the Trans-Labrador Highway did not exist (although outcrops created by it were examined by the author during its construction). During mapping, the only vehicle access in the whole region, outside coastal communities, consisted of, i) a road linking Red Bay to Blanc-Sablon, ii) a 9-km-long road between Lodge Bay and Mary's Harbour, iii) and a woods road extending 15 km west of Port Hope Simpson.

Each field season, except for coastal tent camps in 1979, a base camp was set up for the summer in one of the coastal communities. When mapping inland, cabins in the field area were used where available. Having a fixed-base camp necessarily means increased daily helicopter time commuting to areas being mapped, but these logistical costs were more than offset by reduced expense in positioning supplies – particularly helicopter fuel, which could be delivered cheaply by coastal boat, rather than expensively flown in by aircraft. Having access to a power supply in the community allowed rock cutting and staining (potassium specific) to be done in the field on a daily basis, which greatly improved reliability of rock identification. Also, having rock slabs provided a readily accessible and easily stored permanent collection of all samples. As any field geologist will appreciate, a dry roof over one's head greatly enhances productivity, especially in being able to make effective use of wet days to catch up on data entry, compilation and sample processing.

Three distinct stages of mapping approach over the duration of the project can be identified, involving progressively increased reliance on helicopters, and partly coupled with decreasing quantity and quality of rock exposure. During the first period, between 1979 and 1984 inclusive (except 1983), helicopter support was only available for part of the field season. For the remainder of the season, access, away from the coast, was gained by positioning temporary camps (fly camps) on selected lakes using fixed-wing aircraft, or, on the coast, by using small boats to position camps beyond the reach of daily travel from base camps (float camps). Ground traverses were carried out from various points on the lake (using canoe or zodiac) until all areas that were within reach of a day's walk had been covered (3 to 6 traverses). This method has inherent inefficiencies in that there is a limit to how far away from the lake a traverse can reach in a day as one must return to the starting point. This distance is about 4–6 km from the lake in the terrain of eastern Labrador, with a few longer two-day traverses. Coverage is uneven because traverse routes must converge on the lake. Where the region has a pronounced structural grain, further inefficiencies are introduced by being obliged to traverse parallel to strike some of the time. The result of this approach is a petal pattern of loop traverses around particular lakes with large areas, more distant from lakes, left untraversed. These were then filled in, when helicopter support was available, in two ways, i) linear ground traverses and ii) helicopter traverses making spot checks (rock hopping). Coastal regions were mapped by ground traverses along shorelines, loop traverses inland from the coast and, occasionally, linear traverses across peninsulas. Many of the smaller coastal islands were either visited at one or two spots by boat or helicopter, or merely traversed on one side, or neglected altogether.

From 1985 to 1995 helicopter support was available throughout most of the field season, except for relatively short periods at the start or end of the season, which were used to map, by ground traverse, areas within reach of the base camp. This shift in approach involved very little change in overall cost, as increased helicopter expenses were offset by decreased fixed-wing support, as it was no longer necessary to position/de-position fly camps. To make most effective use of continuous helicopter support, the size of field parties and area to be mapped were also increased in some years, from a 5- to 7-person field party (1984, 1985, 1986, 1987, 1993), and from 4 to 6, 1:50 000-scale map areas. For the most part, mapping was done by ground crews conducting linear traverses across strike, using the helicopter mostly for dropping off and picking up personnel. In addition to the obvious advantage of achieving much more uniform ground-traversing coverage, it was possible to collect more samples and carry out longer traverses, since samples could be cached for later pick-up. The introduction of portable two-way radios in 1985 also greatly enhanced flexibility and efficiency because it was no longer critical to adhere rigidly to planned traverse routes since field crews could now orally direct the helicopter to their ground position. Helicopter spot checking was also reduced to a minor role as a result of optimizing ground traversing. Ground traverses along the coast, in areas beyond the reach of daily travel from base camp, were also positioned by helicopter. This was not such an expensive alternative to using small boats and float camps as it might first appear. Apart from huge savings in travelling time, ground traversing along the coast was usually done on days when cloud ceilings were too low to allow inland operations, and the helicopter would have been otherwise idle (noting that helicopter contracts call for averaged daily minimum flying hours – usually 3 hours per day, at that time).

From 1996 to 2000 (and in 1983), helicopter support was available for the full field season. In contrast to earlier years, however, mapping was conducted without the support of large field crews (north of Double Mer in 1983 and south of the Mealy Mountains between 1996 and 2000). The change in approach was a consequence of mapping very poorly exposed regions, where the majority of outcrops are very small, widely separated, and difficult to find on the ground unless their position has been previously pinpointed exactly from the air. Ground traversing in such regions is largely a waste of effort, as it becomes necessary to fly along the route of the planned traverse first of all to locate outcrops and then walk between them, perhaps only examining 2–3 outcrops in a day. Landing in the nearest clearing after the outcrop is spotted and walking to it was found to be more efficient, although even this approach can also be time consuming where clearings are sparse and long hikes are required (more than 1 km one way was rarely done because it took too long). Usually 20 or more outcrops were visited in a single day (depending on the amount of walking required). For this operational method, the field party consisted of a mapping geologist, one or two assistants and a helicopter pilot. Savings in costs from having smaller crews (not only salaries, but also reduced fixed-wing flying time required for transporting fewer supplies and less equipment) offset an increased helicopter budget.

A1.2 FEATURES OF THE 1:100 000-SCALE MAPS

A1.2.1 MARGINAL NOTES

Rather than provide marginal notes summarizing geological features of individual maps, the decision was made that this would be done in a separate publication (this report) and that the notes would be confined to providing specific clarifications regarding data sources and interpretational approach adopted. In the notes, it is emphasized that these maps are not simply compilation products. Since publication of its preliminary version, every map has, i) been augmented by follow-up examination of stained slabs, ii) utilized subsequently obtained petrographic, geochemical, isotopic and geophysical data, iii) benefited from geological knowledge acquired from adjacent map regions, iv) benefited from additional data acquired during later visits, especially during mapping along the Trans-Labrador Highway, and v) been integrated into a consistent geological model for eastern Labrador. Also to be kept in mind is that, especially in complex, high-grade metamorphic terrains, such as most of the Grenville Province, any rendering of geological features into a cartographic product, particularly at a reconnaissance level, is an exercise that involves many simplifications, approximations, compromises and guesswork. Users should not expect to find features on the ground exactly as depicted on the maps.

A1.2.2 LEGEND

A common legend applies to all 25 1:100 000-scale maps. Each geological unit is assigned a two-part unit designator, embodying both time and rock-type (*cf.* unit designators, following). Colour coding of polygons follows two principles. The first is that felsic rocks were assigned colours at the red end of the spectrum, whereas mafic and ultramafic rocks are at the blue end of the spectrum. In accordance with normal conventions, older rocks and/or those in small polygons were generally assigned darker colour tones.

A1.2.3 LITHOLOGICAL BOUNDARIES

No distinction is made between types of geological boundaries (*e.g.*, 'assumed', 'inferred' and 'definite'). Such distinctions rely on closeness of geological observations to a contact. In reconnaissance-level maps where field tracing of contacts is not usually undertaken, that control can be inferred from the distribution of data stations (although augmented by geophysical or topographic clues), so no further information would have been conveyed by contact-type subdivision.

It is suspected that many more contacts are actually shear zones than shown.

A1.2.4 MARGINAL MAPS

Four inset maps are displayed on each of the 1:100 000-scale maps, showing i) a map-region index map, ii) regional aeromagnetic map, iii) regional structural map, and iv) regional geological map. These are considered by the author to be the most useful in providing a broader context, beyond an individual map's borders.

A1.2.5 OTHER FEATURES

The most important 'hidden' feature is that geological features have been extrapolated under water (lakes and for some distance offshore). From a map-preparation perspective, the main reason for doing this was to help achieve consistency of geological interpretation between areas on either side of bodies of water. It is possible to view underwater interpretation in the digital versions of maps by turning off the water-fill layer.

Surficial deposits have not been shown on any map, anticipating that the bedrock maps will eventually become part of a digital atlas containing separate surficial-deposit layers, so representing such information on these maps would merely conceal best-guess interpretation of bedrock.

A1.3 DATABASE

The digital database that accompanies this report comprises twenty Esri file geodatabase tables used in the digital map product (*e.g.*, geochronology, stations, structure). Details of all of these are given in the ensuing text (table names italicized). The twenty database tables are also provided as Excel tables and GIS shapefiles as these two formats are easily opened in many programs. There are also three additional non-GIS Excel tables, including the *WholeRockGeochemistry_All* table. The database field names are a maximum of 10 characters so they are not truncated in the shapefiles. Explanation of database field names is given in table *Metadata_Tables_ Spreadsheets*. For the GIS file geodatabase and shapefiles, the code values '-99' or '-999' are inserted into blank cells of numeric fields so they are not filled with zeros.

This data represents the edited distillation of 50 database tables submitted by the author concomitantly with the draft version of this report. The author's original database is retained in the archives of the Geological Survey of Newfoundland and Labrador (GSNL), but no further reference to it is made in this Appendix. Relationships between the original and final versions of the database are summarized in the metadata Excel table *Gowerdatabase*. The final database contains all useable data from the original database; omitting, for example, information regarding uncertainly known locations and inconsistencies of various types (*see* subsequent text).

A1.3.1 DATA STATION TABLES

The basic building block of a geological map, especially that at reconnaissance scale, is a data station – a site at which the geologist stopped, accurately located his/her position, described the outcrop and collected various types of information (*e.g.*, samples, photographs, structural measurements, geophysical readings). Typically, during reconnaissance mapping, very few lithological boundaries are actually traced in the field and plotted directly on maps, aerial photographs or other media.

Table A1.1 provides information regarding areas mapped, the number of data stations in that area, and the data station density for each map region. These numbers can be totalled in various ways, so they should only be taken as an approximate guide. The area for each map region was calculated by summing the area of geological polygons. In coastal areas, the polygons have been extrapolated a short distance offshore, but the additional area is less than 5% of the total coverage for eastern Labrador. Given that data station density along the shorelines is much higher than in interior regions, the inclusion of the offshore parts of the polygon areas provides a balancing effect when calculating this density. The number of data stations is an order magnitude greater than achieved during previous Geological Survey of Canada mapping (although taking 18 *vs.* 4 project-seasons to do it). The average density of data stations per map region ranges from 1 to 8.6 per 10 km^2, including both federal and provincial sources of data (Table A1.1; Figure A1.1). Quality of exposure, quality of access, size of area to be mapped, and size of field party are the principal factors influencing data density.

Data stations are listed in table *Stations*. They can be subdivided into three categories, namely those established during 1:100 000-scale mapping, those captured from other mapping projects, and those resulting from other field activities (such as isotopic, paleomagnetic and structural studies). During 1:100 000-scale mapping, data stations were recorded using two initials of the mapping geologist, the project year and a sequential three-digit number for every site described, starting from 001 for each mapper (no mapper exceeded 999 stations in a field season). Data stations captured from other sources have also been included in the database and do not necessarily conform to this identification system. The names represented by the initials are given in a table named *StationsMappingPersonnel*. This table is available in the project's database, but is not part of the digital map product.

The same initials apply to two different geologists in some cases, such as DB- DD-, MW- and SP-, but, as the years are distinct, duplication is avoided. An annoying problem exists between C**C**87- and C**G**87- stations, as the predominance of CG- stations throughout eastern Labrador makes it easy to misread CC87- stations. In one case, three different initials (VN95-, TN95- and VAN84-) belong to the same mapper (Tim van Nostrand). In 1995, T. van Nostrand was shared between two projects, and it was thought, at the

Table A1.1. Summary of number of data stations, area of map and data-station density for each map region in eastern Labrador

Map Region	NTS Area	GSNL Data Stations	GSC Data Stations	Other Sources	Other Sources	Number of Data Stations	Area (km^2)	Density (stn/10 km^2)
Grand/Nipishish lakes	13K	251				251	2729	0.9
Eagle River	13B/NE	341	14	2	University	357	3755	1.0
Crooks Lake	13B/NW	360	27			387	3756	1.0
Upper St. Paul River	13B/SE	378	16			394	3798	1.0
Upper St. Augustin River	13B/SW	383	28			411	3799	1.1
Lake Melville	13G/NW	212	281	2	University	495	3671	1.3
Double Mer	13J/SW	531	80			611	3627	1.7
Southeast Mealy Mountains	13G/SE	580	55			635	3712	1.7
Kenemich River	13G/SW	297	342			639	3714	1.7
Big River	13J/NW	142	39	42	Exploration	223	1092	2.0
English River	13G/NE	715	189	1	University	905	3650	2.5
Alexis River	13A/NW	953	7	4	University	964	3754	2.6
Kyfanan Lake	13A/SW	979	10			989	3797	2.6
Sandwich Bay	13H/NW	1056	18	3	University	1077	3668	2.9
Byron Bay	13I/NW	333	76	65	University	474	1403	3.4
Rigolet	13J/SE	1176	162	19	University	1357	3626	3.7
Groswater Bay	13I/SW	641	76	90	University	807	2097	3.8
Sand Hill River	13H/SE	2194	27	1	University	2222	5688	3.9
Adlavik Islands	13O	126				126	296	4.3
Benedict Mountains	13J/NE	726	176	676	Expl./Univ.	1578	3582	4.4
St. Lewis River	13A/SE	2332	93	31	University	2456	5116	4.8
Paradise River	13H/SW	1995	55	10	University	2060	3711	5.6
Port Hope Simpson	13A/NE	3051	233	7	University	3291	5632	5.8
Table Bay	13H/NE	1211	13	4	University	1228	2042	6.0
Pinware River	12P	2065	588	45	University	2698	3135	8.6
Totals		22076	2564	1000		25640	74610	3.4

Notes: Data station total excludes data stations that are listed in the database, but are outside mapped area (*e.g.*, from Geological Survey of Canada mapping by Stevenson and Bostock). Also excluded are data stations of Nunn (station locations known but notebook lost, so no geological information available).

time, that a different-initial strategy would lead to less confusion. VAN84- was applied to data stations established for van Nostrand's M.Sc thesis. Also RH and RM stations belong to one person due to a name change. In the case of GN95- data stations, no information is available beyond their location. This is because the field notebooks were lost. The station locations have been included in the hope, perhaps optimistically, that the notebooks might be rediscovered one day. That the notebooks are no longer available is indicated in the Comments column.

Note that data stations established by the author and his assistants during 1:100 000-scale mapping do not have suffixes (but the samples from them may have). This does not necessarily apply to data stations included from other sources. For example, BK71- stations (Geological Survey of Canada) appear as BK71-023.1 and BK71-023.2 and BK71-082.1A and BK71-082.1B; each of these refers to a discrete, separate location.

In some cases during the 1:100 000-scale mapping project, the same site has been assigned more than one data station number. In retrospect, this is extremely irritating and should not have happened. It resulted mostly during collection of additional samples (mainly for geochronological or paleomagnetic purposes) from previously visited locations (possibly several years earlier), when documentation relating to the original data station was not at hand. Rather than having samples with temporary or no identification, they were simply assigned the next available station number for the current year. Re-labeling these samples to the original data station later was deemed more likely to introduce confusion

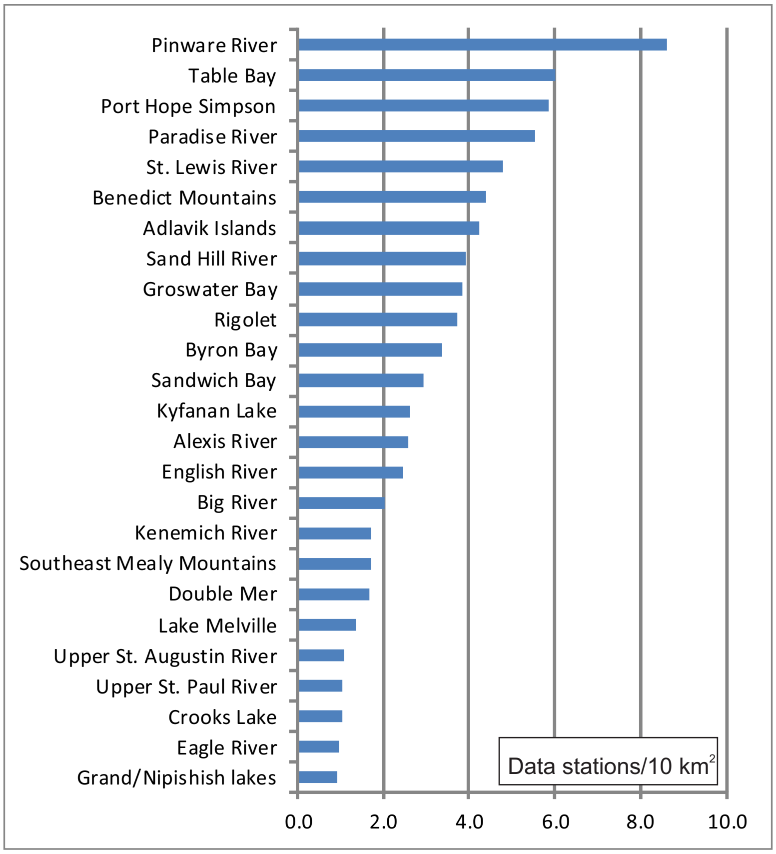

Figure A1.1. *Data station spatial density, according to map region.*

than clarity, particularly when the later data station number had been incorporated in the notes of more than one person. At sites where geochronological investigations have been carried out, especially, the later number has become entrenched in scientific literature so cannot now be expunged. In a few cases (less than 10) the same location was visited a second time by a different mapper during routine mapping, This happened especially during helicopter work, and, despite being an irritant to the map compiler, does provide something of a precision check on field observations.

Many of the data stations not obtained by the author or his assistants were captured from: i) earlier mapping by the Geological Survey of Canada (K. Eade, I.R. Stevenson, H.H. Bostock and R.F. Emslie; data stations from fringe areas mapped by F.C Taylor and F.M.G Williams were not captured); ii) earlier or concurrent mapping by the GSNL (M.E. Cherry, P. Erdmer, G.A.G. Nunn, D.G. Bailey, T.S. van Nostrand, and R.J. Wardle); iii) from university studies (V.J. Owen, T.S. van Nostrand, S.A. Prevec, D. Corrigan, J.W.F. Ketchum, D.J. Scott, G. Bybee); (iv) mineral-exploration company mapping; and vi) other specialized studies, for example paleomagnetism (W.F. Fahrig) or structure/kinematic investigations (S. Hanmer). The field notes of Eade, Stevenson, Bostock, Emslie and Hanmer were made available to the author by the Geological Survey of Canada. Including 'external' data stations exacerbates the complication of the same location having been assigned more than one number, as many sites visited during other projects were re-examined during 1:100 000-scale mapping. If a previous project included data from both within and outside the area covered by the 1:100 000-scale maps of Gower (2010a), then all the data stations were captured, rather being selective. This situation applied particularly with respect to the mapping of Stevenson (1970) and Bostock (1983).

Exclusion of information from uncertainly known locations mostly concerns stations compiled from other sources (over 90%). Regarding the remainder, there are a few cases (<0.1%) where description of an outcrop is given in field notes, but the data station could not be located on any map or air photograph, or *vice versa*, where a location is indicated on a map/photo but no notes are recorded. Some are end-of-the-day stations and are attributable to tiredness and(or) sudden arrival of the helicopter (the per-minute costs of which encourage haste). There are a few instances where there are accidental or deliberate gaps in sequential data stations, so the station never existed in the first place.

In the comments column in the *StationsMapping Personnel* table, the comment 'trainee mapping' is indicated in places. These data stations represent mapping by inexperienced assistants. The traverses were carried out in low-priority areas that, otherwise, in all probability would not have been done at all. The work was closely supervised and more samples were collected on these traverses than was typical elsewhere. The total number of stations involved is less than 0.1% of the database.

A1.3.1.1 Data Station Location

Much of the mapping was carried out before the advent of reliable GPS technology. Most data station locations (about 90%) were originally located on 1:50 000-scale greyscale aerial photographs, but some were also recorded on 1:50 000 topographic sheets (which were sometimes used during helicopter traversing, instead of shuffling numerous aerial photographs), and a few even on 1:250 000 topographic sheets (in instances where outcrops were visited outside the current map region and a more detailed topographic map was not available at the time – less than 50 data stations in total). From 1998 onward, locations were recorded both by GPS and on aerial photographs.

Digital locations are given in the *Stations* table as UTM easting and northing coordinates (Zone 21, NAD27, including those stations actually located in Zone 20). Digital information for those data stations not obtained directly by GPS was determined from the original medium on which the data stations were plotted. In the case of locations recorded on aerial photographs, this involved calibration of the photograph by determining the UTM co-ordinates of two points on the aerial photograph that could be matched accurately with some feature on the corresponding 1:50 000 NTDB topographic map. Based on 31 stations that were accidentally redigitized, digitizing precision (given as the average difference between two readings) was found to be about 10 m in both easting and northing. Where digitizing was done from 1:50 000 topographic sheets, obviously the UTM grid on the map could be used directly for calibration. It is inevitable that small errors in location have crept in due to calibrating aerial photographs in this manner, but they are unlikely to be serious. In instances where a location is indicated on more than one aerial photograph, the location was redigitized as a check on the calibration process. The location errors were generally well below 100 m. Where this was not the case, the reason for a larger error was sought (most commonly because the data station location had not been accurately marked on both photographs). In instances where only one or two data stations were recorded on an aerial photograph, the location was transferred to a 1:50 000 topographic map and the UTM coordinates determined manually. When done carefully, using a 1:50 000 1000 m^2 reticule, this method was as good in determining location as any other available at the time (including using then current GPS instrumentation). As locations obtained manually were rounded off to 10 m, most coordinates obtained this way can be identified in the database by a final zero for both the easting and the northing.

At 1:100 000 scale, an error of 100 m (which, granted, would be considered very imprecise by present standards) displaces the location by 1 mm on the map and is unlikely to be of much significance to most map users, except perhaps in the field, when attempting to find small outcrops. In the author's opinion, any field geoscientist unable to locate an outcrop within 100 m of where it is shown on a map would be well advised to seek an alternative career.

The locations of all data stations have been edited so that they are accurately positioned with respect to the currently available digital 1:50 000-NTS NTDB topographic base. As some 1:50 000 maps locally show minor mismatch at their borders (generally less than 100 m), this implies a concomitant absolute error in the locations of data stations.

None of the above discussion in this section addresses the possibility that outcrops might have been located inaccurately in the first place, of course.

A1.3.1.2 Areas Mapped

In the database (*Stations* table), area information is given by NTS topographic sheet and by map region. The map region names refer to the final 1:100 000-scale maps of Gower (2010a). Although all 1:100 000 maps produced for the area are quadrangles covering 4 to 6 1:50 000- NTS map sheets (with rare exceptions), not all the data within that area was necessarily obtained during a single field season (Figure 3.1). This is especially true between 1979 and 1981 when area mapped was governed more by distance from base camp (*e.g.*, Rigolet in 1980 and Cartwright in 1981). It was only during map preparation that the co-ordinate-bounded quadrangles were adopted. From 1983 onward, mapping was more systematic, in part facilitated by extensive helicopter use. The 'standard' map region was taken as 4 1:50 000-NTS map sheets, but parts of additional 1:50 000 map areas were included in coastal areas where it made little sense to produce separate maps.

Even when mapping settled into the systematic scheme of 4 1:50 000 map sheets per year, the data for the area may have been acquired before or after the specific year it was targeted for mapping. The most common reasons for data stations predating the year of mapping are either, i) ground traverses strayed into a neighbouring unmapped map region, or ii) pre-mapping reconnaissance. Conversely, data stations may postdate the year of mapping either because i) ground traverses strayed into a previously mapped area, or ii) post-mapping follow-up.

A1.3.1.3 Aerial Photographs

With the advent of GPS, satellite coverage and digital maps, the use of aerial photographs has declined drastically, but at the time of mapping they were essential. The airphoto number is only given in the *Stations* table in the database for those data stations that have been plotted from an aerial photograph. In other cases, especially in data captured from other sources, locations of stations were obtained by various means, such as from paper station-location maps or co-ordinates given in publications.

Table A1.2 lists, by roll and frame numbers, the aerial photographic coverage used for the project. Aerial photography (grey tone) was carried out for the whole region between 1968 and 1972 along east–west flight lines at about 8-km spacing. Contact prints are nominally at 1:50 000 scale and the photographs are of good quality, although a few instances exist where the terrain is obscured by cloud or coastal fog. Flight lines are numbered sequentially from Line 1 at Blanc-Sablon to line 58 north of Makkovik. One photograph is erroneously numbered on the photograph. Roll A21895, frame 36 should be Roll A21892, frame 36.

Table A1.2. Aerial photographic coverage for eastern Labrador

Roll	Frame	Missing Frames	Reason Missing
A20568	001-042	-	
A20569	001-107	61	Sea coverage only
A20569	001-107	074-075	Overlap with other photos
A20569	001-107	091-093	Sea coverage only
A20570	025-050	-	
A20572	003-181	8	Loaned, but not returned
A20572	003-181	010-012	Loaned, but not returned
A20572	003-181	014-108	Outside area of interest
A20572	003-181	110	Loaned, but not returned
A20572	003-181	112	Loaned, but not returned
A20572	003-181	115	Loaned, but not returned
A20573	004-176	-	
A20574	001-047	30	Unknown; should have it
A20575	001-185	080-181	Outside area of interest
A20576	001-077	015-061	Outside area of interest
A20576	001-077	069-070	Outside area of interest
A20579	132-248	-	
A20580	001-254	-	
A20581	027-192	056-059	Sea coverage only
A20581	027-192	105	Sea coverage only
A20581	027-192	130-134	Outside area of interest
A20582	022-206	046-111	Outside area of interest
A20582	022-206	140	Unknown; should have it
A20582	022-206	157-158	Sea coverage only
A20583	005-244	025-027	Overlap
A20583	005-244	44	Unknown; should have it
A20583	005-244	091-137	Outside area of interest
A20584	001-024	006-020	Outside area of interest
A21263	045-054	-	
A21264	001-080	012-055	Outside area of interest
A21890	092-098	-	
A21891	087-153	-	
A21892	001-144	17	Unknown; should have it
A21892	001-144	093-118	Outside area of interest
A21892	001-144	121-122	Outside area of interest
A21892	001-144	139	Loaned, but not returned
A21893	001-113	-	
A21894	001-234	61	Unknown; should have it
A21894	001-234	083-108	Outside area of interest
A21894	001-234	151-221	Outside area of interest
A21895	077-247	181-225	Outside area of interest
A21896	001-229	009-059	Outside area of interest
A21896	001-229	066-164	Outside area of interest
A21896	001-229	196-204	Unknown; should have them
A21897	001-160	021-022	Sea coverage only
A21897	001-160	093-128	Outside area of interest
A21898	001-238	011-060	Outside area of interest
A21898	001-238	067-069	Outside area of interest
A21898	001-238	114-229	Outside area of interest
A21899	017-204	033-136	Outside area of interest
A21899	017-204	148-196	Outside area of interest
A21900	002-243	067-074	Outside area of interest
A21900	002-243	079-107	Outside area of interest
A21900	002-243	116-197	Outside area of interest
A21901	240-250	-	
A21902	001-157	149	Outside area of interest
A21948	041-070	-	
A22107	067-152	78	Sea coverage only
A22107	067-152	101-103	Outside area of interest
A22107	067-152	134	Sea coverage only
A22380	001-232	031-164	Outside area of interest
A22382	146-185	-	
A22385	138-172	-	
A22487	070-137	-	
A22523	251-257	-	
A22919	063-075	-	
A22921	075-093	-	
A22922	013-061	048-056	Outside area of interest
A22924	001-087	027-077	Outside area of interest

On the 1:250 000-flight-line map available to the writer, the roll number for flight line 14 is omitted (it is A20573).

Other remote photography also exists. Aerial photographs were used by Eade during his mapping in 1961 and obviously predate the 1968–1972 coverage used during this project. Also an east-northeast-trending corridor of infrared aerial photographs about 20 km wide, extending from western Lake Melville to eastern Groswater Bay, is available. These photographs are excellent for mapping the distribution of mafic intrusions on bare coastal exposure. The satellite imagery now available was only used to a limited extent during the latter stages of this project. The author assumes that NALCOR carried out aerial photography along its Muskrat Falls to Forteau power-transmission corridor, but he has not attempted to access it.

A1.3.1.4 Traverse Mode

It was deemed useful to include traverse mode information in the database as a guide to access, and, indirectly, to data reliability. For example, one might expect superior mapping during a ground traverse *vs.* that done using a helicopter, because the observer would have had the opportunity to examine outcrops encountered between those specifically designated as data stations. On the other hand, there is a greater probability that a sample was collected if the stop was done by helicopter.

Traverse mode (in TravelMode in *Stations* table) is classified as boat, fixed-wing aircraft, ground, helicopter, lakeshore, river, road or shoreline. Boat data stations indicate spot examination of coastal outcrops, without necessarily having mapped the intervening shoreline, whereas shoreline stations indicate that the coastline was continuously traversed on foot. Lakeshore and river traverses were done either on foot, or by using small boats. Fixed-wing data stations are those of Eade and assistants during his Battle Harbour–Cartwright project, made by landing a float-equipped Beaver aircraft on suitable lakes.

A1.3.1.5 Date of Field Observation

Remarkably, for data collected during 1:100 000-scale mapping, it proved possible to capture, with complete reliability, the date of every observation made over the course of the project (this does not necessarily apply to data compiled from other sources, particularly data stations established for geochronological or mineral exploration purposes). For the most part (at least 95% of the data), the mapping geologists, including those of the Geological Survey of Canada, conscientiously recorded this information at the start of each field day. In instances where this was omitted, the date could be determined either from diary records, inferences about which traverses were done on a particular day, or some other more oblique detail. From the database, it can also be gleaned that routine field work was not carried out every day. There are numerous reasons that this was so: including bad weather; setting-up, moving or dismantling camp; helicopter servicing or repair; days spent on staff field trips within the field area; visits by other geologists; geochronological, paleomagnetic or mineral occurrence sampling; field excursions outside the project area; injury; disruptions due to bears or other wild animals; rotation of staff between camp and field duties; and even occasional rest days.

The number of observations per field day varied from zero (on rare traverses where no outcrop was found) to over 60 (closely spaced helicopter observations), but the average is probably between 10 and 15. It is mostly a function of outcrop density, but other factors, such as days truncated due to bad weather, also apply.

The project year is also given in the database. This might seem redundant information, in that the year of observation is already embodied in the data station label and the exact date the station was created is also given. It is, however, a useful means of locating groups of stations outside regions where they might reasonably be expected. For example, selecting 1984 project year stations in ArcGIS will immediately show those stations outside the Paradise River 1:100 000 map region, which was the designated region for that project year (similarly for other years – especially 1987 stations outside the St. Lewis River map region).

A1.4 ROCK NAMES, UNIT NAMES AND UNIT DESIGNATORS

A1.4.1 ROCK NAME

The rock names applied in the field and included in the FieldName field in the *Stations* table in the database were extracted from field note books. Further work has shown that a significant minority of these are inaccurate or simply erroneous. That some are not correct has been determined by subsequent visits to outcrops, evidence from field photographs, stained slabs, and thin sections. Although it is tempting to substitute what is believed to be a more correct name, this has not been done. The main reason is that it is impossible to do this for every data station, as additional information is not available for all of them, resulting in an inconsistency in the data field between original and potentially ‘corrected’ field names. The probability of a field name being correct should be judged in the context of; i) the experience of the observer; ii) general familiarity of the observer with the geological makeup of the region at the time of mapping; iii) the length of time available to take observations (*e.g.*, quick helicopter stops *vs.* more leisurely ground traverse observations); iv) quality of outcrop (*e.g.*, coastal *vs.* inland); v) other information available at the time (which, in addition to field photographs and samples, might include geophysical, geochemical and geochronological data), and vi) relationships to the surrounding rocks. Further control is provided by independent observations from two observers visiting the same outcrop. The previous mapping by the Geological Survey of Canada (Eade, Bostock, Stevenson and Emslie) is particularly useful in this regard, although one must be cognizant of nomenclature differences used by various mappers.

All field names mentioned in field notebooks for a given locality are listed as a text string in the database (FieldName field; *Stations* table), each rock type separated by a semi-colon. The names are given ‘storekeeper’ style; for example a biotite quartz monzonite is listed as a ‘Monzonite, quartz, biotite’ and a meta-leucogabbronorite is listed as a ‘Gabbronorite, leuco (meta)’. This is to assist database sorting on the root of the name, rather than its qualifiers. Where alternative names were offered, either because of uncertainty or gradational features, both names are given, separated by a forward slash. Where alternative names were offered, qualifiers are given after the root names (*e.g.*, Monzonite, quartz / Granite, biotite, K-feldspar megacrystic). The name ‘Granite / Granodiorite gneiss’ should be taken to mean that the rock is gneiss of granite or granodiorite composition. Editing has been carried out at a trivial level (for example ‘mylonitized’ has been changed to ‘mylonitic’, which is the more common usage). ‘Mylonite’ has been retained. ‘Syenogranite’ *etc.*, is reported as Syenite / Granite, to conform to standard nomenclature. One slightly more significant modification involved changing aplite to microgranite, which is presented in the database as ‘Granite, micro’. ‘Mafic dykes’ and ‘Amphibolite dykes’ are generally equivalent, although separate names have been retained in the database. Where a mafic dyke is known to be unmetamorphosed, this has been indicated. Any less common minerals mentioned in field notebooks have also been included, especially in the case of pegmatites (*e.g.*, ‘Pegmatite, muscovite’). On the other hand, characteristic, and possibly critical, minerals likely to be present may have been omitted. For example, just because pelitic gneiss is not qualified by sillimanite, kyanite, cordierite, muscovite or garnet (say), does not mean that one or more of these minerals are necessarily absent. Whether or not an omitted mineral is likely to be present should be made on the basis of regional distribution, rather than naively assuming it is not present if not listed.

A1.4.2 UNIT NAME

Unit names have been assigned to every data station in the database (Unit field; *Stations* table), excluding stations that are outside the 1:100 000-scale geological maps of Gower (2010a). Pertinent data stations are retained in the database, however, because they belong to project areas that are largely within it (*e.g.*, Stevenson, 1970; Bostock, 1983).

Many of the unit names are now well established in the literature, but others are introduced here for the first time. Note that units may include multiple rock types (*e.g.*, ‘13B10 southwest pluton’ includes both K-feldspar megacrystic and non-megacrystic granitoid rocks – M_{3D}gp and M_{3D}gr). The dearth of geographic names in interior parts of the region has forced creative name labelling, such as according to the part of the 1:50 0000-NTS sheet in which the rock unit occurs. The names are informal and merely intended to give a first-order indication of probable affiliation of the rocks at that locality. The younger the rock, generally the more secure the name.

A1.4.3 UNIT DESIGNATORS

A unit designator is an abbreviation for a rock type. Despite the explanations that follow, it should be kept in mind that the unit designator assigned may be no more than an educated guess. Unit designators given in text headings in this report are intended to communicate the major rock types present, rather than be exhaustive as to all rock types present.

Unit designators used here are alphanumeric strings consisting of two parts. The first part of the string is a combination of letters that refers to some geological time period. In the case of unit designators used in eastern Labrador, the first letter represents large time segments (*e.g.*, P, M and N for Paleoproterozoic, Mesoproterozoic, and Neoproterozoic, respectively), and subsequent letters/numbers represent successive subdivisions of that time (*e.g.*, P_{3C} is Paleoproterozoic, with the ‘3’ meaning 1800 and 1600 Ma, and the ‘C’ meaning between 1660 and 1600 Ma). The time periods represented by these strings are given on the 1:100 000-scale maps. Note that although the geological polygon will only indicate one rock type, the designator for any data station within the polygon may include several rock types (*e.g.*, P_{3C}rg, M_{I}d, M_{3D}gr, p), according to observations made.

The second part of the string is a sequence of letters that abbreviate rock-type names in a, hopefully, mnemonic manner (*e.g.*, ‘gr’ for granite, ‘gd’ for granodiorite). Where possible, the first letter represents a broader category of rocks than subsequent letters. For example, ‘s’ is for sedimentary, with ‘sq’, ‘sc’, ‘sp’ for quartzite, calc-silicate rocks and pelitic gneiss, respectively. Similarly ‘v’ is for volcanic with ‘vf’ and ‘vm’ for felsic and mafic, respectively. Perhaps the least mnemonic usage has been applied to mafic intrusive rocks such as gabbro, for which the letter combination ‘rg’ is employed. The tenuous logic behind this (apart from the letter ‘r’ being otherwise unassigned) envisaged extending the system to ‘rn’ and ‘rt’ for norite and troctolite, in recognition that all three words contain the letter ‘r’. In practice, gabbro and norite have not been reliably separately distinguished, so ‘rg’ applies to both (gabbronorite). However, the capability for distinguishing leuconorite and leucotroctolite has been retained using the letter combinations ‘ln’ and ‘lt’.

Minor intrusions such as pegmatite, aplite/microgranite (felsite), carbonate veins, quartz veins and mafic dykes have only been assigned one letter (p, f, k, q and d, respectively). Typically, the age of these is only rarely reasonably known, so they are merely tacked onto the end of the string. If they appear in the middle of the string, then age relationships are implied. Particularly in high-grade gneiss terranes, it is typical for an outcrop to include several rock types, each of which has its own unit designator. In the database, all rock types are given in the string. The unit-designator order generally reflects abundance at the outcrop, but this may not be true in all cases. Although the order is not necessarily meaningful, odd orders should be taken as signaling otherwise.

Where rock-type identity is uncertain, two or more choices are offered, separated by a ‘/’. For example, ‘P_{3C}an/ln’ would mean 1660–1600 Ma anorthosite or leucogabbronorite. If confidence regarding the age of the rock is lacking, then the unit designator would be written as (say) ‘P_{3C}an/M_{I}an’, offering a choice of ages deemed most probable. If confidence in both the age and the rock type is lacking then this would become ‘P_{3C}an/ln/$M_l$an/ln. Many will find this equivocation irritating, but it is hoped that some users will welcome the interpretational flexibility that this system confers.

Commonly, especially in gneiss regions, rock types of several ages and types may be present in a single outcrop. Rock types believed to all fall in the same time period are separated by a comma, whereas rocks interpreted to be of different ages are separated by a semi-colon. Thus ‘P_{3C}an,ln,am’ implies that anorthosite, leucogabbronorite, and amphibolite, all of late Paleoproterozoic age, are present, whereas ‘P_{3B}gr,gd,dr;$M_l$yq,mz;Nd’ would mean late Paleoproterozoic (1710–1660 Ma) granite, granodiorite and diorite; early Mesoproterozoic (1600–1350 Ma) quartz syenite and monzonite; and Neoproterozoic dyke(s). The Greek letters ‘β’ and ‘δ’ have been used to indicate brittle and ductile deformation, respectively, but note that it did not necessarily affect all rocks in the unit designator string.

A1.5 FIELD PHOTOGRAPHS

Field photographs are catalogued in table *Photos*, which contains photographs taken within the region covered by the 1:100 000-scale maps. Field photographs prior to 2001 were taken using 35-mm colour film, whereas those after that time are digital. In addition to recording the photograph location in field notebooks, the data station was commonly also written on the outcrop using a felt-tip pen, prior to photographing. This was done to assist in identifying photography location (a practice no longer needed following the introduction of GPS-linked cameras). In some cases, the written station identifier is very large and has ruined the photograph. In other cases, it is very small and hard to see in the image. It was typically written close to whatever scale marker was used. In a few plates in the report, the data station label has been digitally moved to improve the image. The original photograph has been retained in the database.

Some of the information included in these tables will be of little value to the user (*e.g.*, film roll and frame number) and was compiled originally to help in clarifying the sequence of photographs (and hence their location), when such information was inadequately provided in field notebooks or outcrop annotation. The photographs have been classified as follows: detail (of an outcrop), human interest, outcrop, scene, wildlife/animal, and wildlife/plant.

All field photographs originally taken using 35 mm film were subsequently scanned. All scanned photos as well as the more recent digital photos can be viewed *via* a hyperlink in the *Photos* Excel file and shapefile through the ImgPathHyp field. In the ArcGIS file geodatabase, the photos have been hyperlinked to their site locations.

A1.6 STRUCTURAL DATA

A1.6.1 STRUCTURAL DATA ENTRY AND EDITING

Structural data is contained in four tables, named *Structure*, *StructureFiltered_Outcrop*, *StructuralSymbols* and *StructureKinematics*. All the structural data, except kinematic information, is included *Structure*. Not all the data in this table could be displayed on the 1:100 000-scale maps. That which could is contained in *StructureFiltered_Outcrop*. The *StructuralSymbols* table provides the code for the abbreviations used in the ’Structure’ field in the *Structure* table. It is not a table for use in ArcGIS or similar applications. Information regarding sense of fault/shear displacement is given in *StructureKinematics*. Much of this information was compiled from the field notes of S. Hanmer and D. Scott (*cf.* Hanmer and Scott, 1990). Note that in *StructureKinematics* there is a field that indicates availability of a field photograph of the structure. Access to the photographs may be gained by cross-referencing to the *Photos* table using station numbers.

When data are collected over an extended period by various mappers it becomes almost impossible to maintain complete consistency. To reduce the problem, every structural record has been scrutinized by the author with reference to the original field notebook entries and, if necessary, edited. As this was too large a task to be done all at one time, even this control does not ensure absolute consistency. Some general policies were followed. If a range of strike and/or dip values were given, then the mean value was entered in the database; if two values for a given structural feature were recorded at a data station, both were entered, unless almost the same, in which case a mean value was adopted. Where the strike/azimuth or dip/plunge was described as irregular, variable, subhorizontal, subvertical, or in other qualitative terms, the reading was excluded. The loss of information from so doing is trivial. Any illegible/ ambiguous readings were ignored. To simplify map symbology, a few planar readings, originally recorded as horizontal, were reassigned a dip value of 1° having a strike consistent with the regional trend in the vicinity. Vertically plunging linear readings were reassigned a plunge of 89° with an azimuth dictated by the planar structure recorded at the locality. Although there were justifiable cartographic reasons for these policies at the time, it is the author’s opinion that they are best avoided.

All planar measurements have been entered into the database using the Right Hand Rule. For many batches of data, this meant rewriting the values reported in notebooks.

To characterize the attitude of a fold, both the fold axis and axial surface need to be recorded. In many cases, the axial surface was not given in field note books. Commonly the regional planar fabric serves as an indication of the axial surface orientation.

Generally, linear data was recorded from the same surface as the planar measurement. It is evident, from the values reported at some stations, that either measurements were made very inaccurately, or the linear measurement was measured at an independent location. If not recorded in a field notebook, there is no way to determine what was done. Planar and linear readings have been grouped, and thus displayed as one combined symbol, where the two measurements are mutually consistent, albeit not necessarily exactly so.

Interpretation of various generations of structure applies only to the specific outcrop where they were observed. For example, an F_1 fold at one locality might well be synchronous with an F_3 fold at another.

An attempt has been made to distinguish brittle from ductile fabrics and fault structures, by the symbols ‘β’ and ‘δ’, respectively, using (commonly meagre) descriptions given in notebooks. Where no mention of brittle or ductile fabrics is given in field notebooks, but they are obvious in hand samples or field photographs, then the brittle/ductile symbol has been added to the unit designator (UnitDesig field; *Stations* table).

The orientations of minor intrusions are recorded according to two groups; D for mafic dykes and V for felsic dykes and veins, including granitoid minor intrusions, quartz and calcite veins. This is a conceptual departure from the database being purely structural in nature, but does have practical advantages. The unit designator applied to the mafic dykes is also included.

As a final caution, some of the data would not meet the needs of a modern structural study, but the information presented should provide guidance regarding how such a study might be most effectively carried out.

A1.7 SAMPLING

A1.7.1 FIELD PRACTICES

Samples were collected for routine identification of mappable units, for investigation of unusual rock types, and for follow-up thin section examination, mineral identification, whole-rock geochemical analysis, isotopic analysis (mainly U–Pb and Sm–Nd), and paleomagnetic study. Multiple samples collected at a single outcrop were distinguished by uppercase letter suffixes and duplicate samples by numerical decimal suffixes. The number of samples collected during a given traverse was strongly influenced by the practicality of how far they had to be carried. Where ground traversing was helicopter-supported, samples were sometimes cached for end-of-day pick-up. During helicopter spot-checking, samples were collected at almost every station (in part to compensate for the brevity of outcrop examination at many of the stops).

Rocks collected during a day’s field work were processed the next day by the designated ‘stay-in-camp’ assistant. Using a portable rock saw, a *ca.* 1-cm-wide slab was cut from every rock collected, with additional material set aside if the sample had been selected for thin sectioning, geochemical analysis, or other purpose. The slab was stained (K-specific) by first etching with HF, then applying a saturated Na cobaltinitrite solution. Because of the hazardous nature of HF, this was done in the open air using protective clothing, gloves and face mask. Although about 14 000 samples were stained this way without incident, staining in the field is no longer practiced, current safety standards requiring it to be done under laboratory-controlled conditions (generally resulting in better stains). The rock name given in the *Samples* table of the database is based on the stained slab; it may differ from the field name. Unfortunately, it was rarely possible to prove whether inconsistencies between names reflect incorrect field/slab identifications or genuine heterogeneity of the sampled outcrop.

All slabs have been scanned and a hyperlink to the images can be accessed directly from the *Samples* Excel file and shapefile through the ImgPathHyp field or the site location in the ArcGIS file.

A1.7.2 SAMPLES TABLE

The *Samples* table is a listing of samples collected during either, i) the course of 1:100 000-scale mapping in eastern Labrador, or ii) during other mapping in the region. The total number of samples listed (including those collected by other projects), at the time of writing, is over 18 000 (although some of these are not actually available as stained slabs – *see* below).

A1.7.2.1 Samples Collected During 1:100 000-scale Mapping

The *Samples* table lists 18 544 samples. Of these nearly 16 000 were collected during the course of 1:100 000-scale mapping. Almost all were collected by the author or his assistants. Excluded from the 16 000 sample total are those collected by A. Doherty during his mapping of the Adlavik Islands area (GSNL Map 2010-01; Gower and

Doherty, 2010), the majority of which are no longer available, having been, at some stage, either lost or discarded. Also excluded from the sample total are samples collected by P. Erdmer and assistants during his mapping of the Double Mer area (GSNL Map 2010-06; Gower and Erdmer, 2010). Separate slabs were not prepared from the original sample. The samples were cut, however; the cut surface was stained and the samples are retained in GSNL rock storage. Included in the list total are the samples collected by T. van Nostrand and assistants during his mapping of the Alexis River area (GSNL Map 2010-19; van Nostrand and Gower, 2010).

There is no way of knowing, in every case, whether the sample is representative of all outcrop at the data station, which is an acute problem in gneiss terranes, where the rocks are inherently complex. Also, because it is impossible to know how representative any sample might be without returning to the outcrop, the rock name (as judged from the stained slab) is entered into a separate data field (Rocktype field; *Samples* table) from the rock name based on outcrop description (FieldName field; *Stations* table).

Of the samples listed, stained slabs are available for almost all of them. The stain quality field 'StainQual' records 'no slab' for those samples for which slabs are absent. There are several reasons why slabs are lacking for some samples (*cf.* 'Comments' field in the *Samples* table). These may be quite simple, such as either, i) the original sample may have been very small and used entirely for another purpose (*e.g.*, a thin section), or ii) there was never an intention to slab the sample in the first place (*e.g.*, it was collected for identification of a specific mineral). On the other hand, some mix-ups undoubtedly exist. For example, the field notebook (and/or the hard-copy sample catalogue that was also kept at the time) may indicate that a sample was collected, but no actual sample is present. Whether this is due to incorrect information entry in the field notebook or catalogue and that a sample was never collected in the first place, or that the sample was subsequently lost or mislabeled, is not easy to determine. If it has been mislabeled then the possibility that it could be found within the sample collection exists, as the *Samples* table also document samples that are present, but for which there is no record in a field notebook or catalogue. Some successful reconciliation between "shouldn't-have samples, but do" and "should-have samples, but don't" has already been accomplished by cross-referencing between residual hand samples, slabs, thin section chips and thin sections. More is undoubtedly possible (which is why equivocal data have not been deleted), but is time consuming and hard to justify as a priority.

For the slabs present, the stain quality field 'StainQual' differentiates between 'good', 'mediocre', 'poor' and 'unstained' (10 155, 3061, 2563 and 166 samples, respectively). The quality-of-stain assessment is qualitative and was rapidly done, but the judgment may be helpful to those less familiar with examining stained rocks. The unstained rocks mostly simply got missed, or were acquired after staining the particular batch of samples to which they are logically related and were never 'got around to'.

The SampleUse field in the *Samples* table also lists how the sample has been used (for geochronology, whole-rock geochemistry, thin section, hand sample, mineral identification, or probe). Generally, each rock subjected to a more sophisticated level of study passed through the 'lower' levels. Thus a dated U–Pb sample, for example, would also be supported by a whole-rock geochemical analysis, a petrographic thin section, a stained slab and a residual hand sample. This practice was not universally followed, however, particularly in the early years of the project. Apparent inconsistencies are not as erratic as might first appear, however. For example, many of the samples for which whole-rock geochemical data are available, but lacking an accompanying thin section, are gossans that were analyzed simply to evaluate their economic potential.

For some of the geochronological samples apparently lacking geochemical data and/or thin sections, this information may be available under another sample label. Some sites, for which geochemical or petrographic data were already available, were revisited and resampled simply for geochronological purposes and, unfortunately, a new data station label used. The Comments field in the *Samples* table provides information where this is the case. Conversely, situations also exist where duplicate analyses and thin sections exist from single data stations, especially geochronology sites. This situation arose when a whole-rock geochemical analysis and thin section were obtained for the actual geochronology sample, despite already having data from another sample from the same outcrop.

Parallel situations, with respect to additional data stations or duplicate sampling, also apply to sites at which samples were collected for paleomagnetic studies.

A1.7.2.2 Samples Collected During Other Mapping Projects in the Region

Samples listed in the *Samples* table, but collected by other mappers include, i) those of the Geological Survey of Canada during earlier reconnaissance mapping, ii) those of the GSNL during 'targeted' 1:100 000-scale mapping (Figure 2.2) and, iii) various specialized, mostly university, research projects. Some of these sample collections are still available, whereas others are incomplete or rock samples have been discarded.

Geological Survey of Canada mapping was carried out by K. Eade (1:500 000-scale Battle Harbour–Cartwright project; sample series EA61-, but data stations EA61-, M61- and R61-); I. Stevenson (1:250 000-scale Rigolet–Groswater Bay project; sample series SG68-, SGJ68- and N68-); H. Bostock (1:125 000-scale Strait of Belle Isle project; sample series BK71-); and R. Emslie (1:250 000-scale Mealy Mountains project; sample series EC75-, ECD75- and EC95-). The author has examined the representative sample collection at the Geological Survey of Canada in Ottawa archived by Eade, but, unfortunately, many of the once-glued-on labels used to identify the samples have fallen off. Eade's thin sections collection has also been used extensively by the author. Note that Eade field stations have labels that distinguish between his own sites (EA61-) and those of his assistants (M61-, R61-), but all his sample labels start with EA61-, regardless of collector; the *Samples* table cross references between the two. The samples collected by Stevenson and Bostock have not been examined by the author, but extensive use has been made of the thin section collection of Stevenson, and, to a lesser extent, that of Bostock. Neither Emslie's rock samples, nor his thin-section collection, have been utilized by the author.

The 'targeted' 1:100 000-scale mapping sample listings include those of R. Wardle (Alexis Bay–Snug Harbour project; sample series RW75-); M. Cherry (Sandwich Bay project; sample series MC77-); D. Bailey (Makkovik region project; sample series DB78-, MF78-, AL78-, DB79-); A. Doherty (Adlavik Islands project; sample series AD79-); and P. Erdmer (Double Mer–Lake Melville project; sample series PE82-, MW82-, GB82-). To the author's knowledge, apart from the collection of Erdmer (which is more-or-less complete), very few of the rock samples from these projects remain. The thin sections are still available and have been examined in detail by the author. For the Erdmer collection, note that the author's own policy of thin sectioning samples for whole-rock geochemical analysis was not followed, and no thin sections are available for about half of the whole-rock analyses.

In the university-related mapping category, only samples related to two investigators have been included, namely V. Owen (Smokey area Ph.D. project; sample series V-) and R. Moumblow (formerly Hewitson; Nd isotopic mapping; sample series RH- and RM-). Owen discarded his rock samples, but his thin sections are housed at GSNL. For Moumblow, both samples and thin sections are available at GSNL.

A1.7.3 EARLY-PROJECT GEOCHRONOLOGY SAMPLE CONFUSION

Clarification is necessary with respect to some geochronology samples collected during the early years of the project (also *see* Geochronology Section A1.13), when it was not yet standard practice to obtain thin sections or whole-rock geochemical analyses from the same sample as that submitted for dating. As a result, Schärer (1991) in his trace element and Sr, Nd and Pb isotopic study used some surrogate samples that were either; i) from the same outcrop and same unit as used for U–Pb geochronology; or ii) from the nearest outcrop, of the same unit, from which a thin section and whole-rock geochemical analysis was already available. Table A1.3 summarizes what was done.

In addition, major-element analyses reported in Table 2 of Schärer (1991) for samples CG84-495 and CG84-475 are reversed, and major-element analyses for samples Lab-13 and Lab-12 are also reversed. Trace-element and isotopic data for these samples are not affected. As Schärer's (1991) study did not utilize the major-element data, the integrity of his figures, and other data tables and conclusions remains unaffected by the major-element tabulation error.

The only likely shortcoming in the use of surrogate samples is for U–Pb localities CG84-317 and CG83-554, where different locations are involved. For U–Pb localities CG84-495, CG84-475 and CG84-436A assurance can be given by the author that the age data is closely linked to the W.R. data (and *vice versa*) because, although the U–Pb and W.R. samples were taken at different times, they were taken

Table A1.3. Correlation between U–Pb geochronology samples and whole-rock geochemical samples used by Schärer (1991)

U–Pb Sample	Whole-rock Geochem Sample	Relation of Whole-rock Sample to U–Pb Sample
CG83-554	NN80-349	Whole-rock sample, 1 km to southeast
CG84-172A	CG84-172A	Same sample
CG84-172B	CG84-172B	Same sample
CG84-317	CG84-315	Whole-rock sample, 3 km to southeast
CG84-436A	CG81-215A	Same outcrop
CG84-468A	CG84-468A	Same sample
CG84-475	CG84-148	Same outcrop
CG84-495	NN84-258	Same outcrop
CG85-309	CG85-309	Same sample
CG85-492A	CG85-492A	Same sample
CG85-492D	CG85-492D	Same sample
CG85-532	CG85-532A	Same sample
Lab-13	PE82-088	Same outcrop (same sample?)
Lab-12	PE82-108	Same outcrop (same sample?)

from the same part of the same outcrop. In the case of U–Pb samples CG84-317 and CG83-554, obviously it is not possible to give the same level of assurance, and for U–Pb samples Lab-12 and Lab-13 the details of sampling are unknown to the author.

A1.8 PETROGRAPHIC DATA

Thin section descriptions (*ca.* 6000) were done over three decades and descriptive information inevitably evolved as greater understanding was gained of the rocks and mineral recognition improved. For example, monazite was 'under-recognized' in early descriptions.

All descriptions were originally recorded on a simple paper form, but were subsequently captured digitally. Data entry was done using Microsoft Access Form view. A form was designed by the author to suit the petrographic data that had been previously recorded on paper. The author recognizes that his design has shortcomings, but, nevertheless, it is a huge step forward compared to having the information still residing in paper format.

To assist standardization of data entry, drop-down menus for data fields were employed. Data entry was not restricted to these options, however, as it was felt that it was important to be able to record instances where anomalous characteristics were encountered. Transfer of much of the information from paper to digital format was initially carried out by student assistants, but, to ameliorate some shortcomings, the digital record for every thin section was later redone by the author, simultaneously with a brief re-examination of the thin section. The original student work was conscientiously done and was not wasted – it was much quicker to modify a record than create it. The reasons for the inadequacies are varied. In many cases, information was either not recorded on the original paper record, or not recorded in consistent or acceptable manner. Also, information required in some data fields is rather subjective (*e.g.*, whether the mineral is primary/relict igneous or primary/relict metamorphic, secondary, or some combination of these), and needed to be standardized, at least to the extent that it was all the judgment of one person.

All petrographic data are contained in table *Petrography*. Images of selected petrographic features are listed in table *Photomicrographs*. In ArcGIS, the 192 images are hyperlinked from their sample locations and in the Excel file and shapefile they are hyperlinked through the ImgPathHyp field.

The rock name assigned from petrographic examination is not rigorous. Igneous rock names, in particular, rely on mineral proportions, especially among the felsic minerals. These have been estimated visually, rather than being based on point counting (except in a few cases). The rock names given in the database also include listing of the non-felsic minerals. Apart from descriptive elaboration, this provides a quick means of filtering the samples in which particular minerals occur. The rock name assigned after petrographic examination is generally similar to that applied to the stained slab as, usually, both came from a single sample. Such does not universally apply, however, as some samples consist of composite rock types. A greater discrepancy is likely between outcrop and slab name, *vs.* between slab and thin section names, as outcrops in gneissic terranes typically consist of several different rock types.

The thin sections are archived at the GSNL, with the exception of a few that for various reasons are now missing. By far the largest group of missing sections is a batch of Michael gabbro. These were sent to Dr. T. Brewer (University of Nottingham, England) for further study. Dr. Brewer is now deceased and, on enquiry to the university after his death, the thin sections could not be located. Thin sections prepared from samples collected during earlier Geological Survey of Canada (GSC) mapping were also examined (K. Eade, I. Stevenson and H. Bostock). Eade's and Stevenson's thin sections were obtained from the GSC and remain with the GSNL. Bostock's thin sections were examined in Ottawa. The numbering schemes of Eade and Stevenson are modified in the author's database, to standardize data organization. For example, samples EA-2-61 and SG-9-8 (collector–sample number–year) are listed as EA61-002 and SG68-009 (collector–year–3-digit sample number).

A1.9 MINERAL OCCURRENCES

Some users of the maps may find it frustrating that the MODS (Mineral Occurrence Data System) mineral inventory label has not been used on the 1:100 000-scale maps. It is possible to cross-reference between the map label and the MODS inventory label using the mineral occurrence table provided with each map, however. The map label has the advantage of allowing several commodities to be listed at any given occurrence, whereas the MODS designation is a unique identifier, based on what is deemed to be the primary commodity for the locality. Note that the mineral occurrence table on the map also provides greater detail than usually supplied regarding the source of information (*e.g.*, page or table number in the referenced report), as it can be difficult to track down such data in the original material, especially in assessment reports.

Information on mineral occurrences is given in the table *MineralOcc*. The table complements a report by Gower (2010c) on mineral occurrences and metallogenesis in eastern Labrador. All mineral occurrences listed in the table are mentioned in Gower's report, with the exception of a few (mainly ilmenite) occurrences in the Alexis River area that were still confidential at the time of writing. Neither Gower's (2010c) report nor the *MineralOcc* table give very much information on the REE mineral discoveries by Search Minerals Inc., as exploration was still in its very early stages at the time of table compilation and much of the data was still confidential. Some more recent information is given by MODS at GSNL.

A copy of the author's table was given to the MODS personnel, and has been utilized extensively in updating their information for the region. It might, therefore, seem that this table provides unnecessary duplication. To some extent that is true, but there are some features of the MineralOcc table that are not shared by MODS. Fields that are directly equivalent to those in MODS are as follows:

i) DepName – Deposit name
ii) NMINO – an NTS/commodity abbreviation, unique to MODS
iii) Commodity – the principal commodity
iv) Status – exploration status (indication, showing, prospect, *etc.*)
v) UTM East
vi) UTM North
vii) UTM Zone

One other MODS field is similar, namely MODSLABEL, which has been changed to MapLabel, as the author felt it was important to make some distinctions that the MODS version of the field does not accommodate (*e.g.*, discrimination between muscovite and biotite, rather than including both under mica).

Some of the fields simply provide regional geological information, namely GeolProv (geological province), Terrane (geological terrane), Rocktype (host rock), MinNature (character of mineralization). One field identifies the 1:100 000-scale map in which the occurrence resides, one field gives the NTS map sheet identifier, and one field gives the reference source.

The (decimal) numbers preceding entries in the GeolProv, Rocktype and Order fields are to facilitate sorting the table into the same sequence as the material is presented by Gower (2010c), although that report does not overtly use the numbering system.

A1.10 MINERAL IDENTIFICATIONS

A small group of minerals (18 samples) was submitted for XRD diffraction analysis, which was carried out by Dr. R. Mason at Memorial University, Newfoundland. The identified minerals are listed in table *MineralXRD*, and the same information was reported by Gower (2010c, Appendix 2).

A1.11 PALEOMAGNETIC DATA

Paleomagnetic data for the region (319 records) all reside in table *Paleomag* (but *see PaleomagEmslie*, mentioned below). The table includes both published and unpublished paleomagnetic data. The table also references available petrographic thin sections and whole-rock geochemical analyses and, in the 'comments' field, provides geochronological and other information.

A1.11.1 PUBLISHED STUDIES

Published studies subdivide into, i) those in which the author was not involved, and ii) those in which he was a participant.

A1.11.1.1 Author Not Involved

Studies in which the author took no part are those of Fahrig and Larochelle (1972), Fahrig *et al.* (1974) and Park and Emslie (1983). The study of Fahrig and Larochelle was done in conjunction with the 1:250 000-scale mapping of Stevenson (1970), well before the author started his activities in the region. The exact location of three of Fahrig's sites was verified in the field by the author (by locating the paleomagnetic sampling drillholes), and the remainder crosschecked against Fahrig's unpublished field records at the Geological Survey of Canada, which were provided to the author by K. Buchan. Details of the Fahrig *et al.*'s (1974) study have not been captured.

The Park and Emslie (1983) study investigated the Mealy dykes in the Mealy Mountains. Sampling was done by Emslie in conjunction with his geological mapping in 1975. The data in the *Paleomag* table was compiled by this author mostly from the published article, but also by utilizing Emslie's field notes. The reason that the suffix pmag is added (by this author) to the Emslie station identifiers in *Paleomag* is because Emslie used a parallel system of data station labels to those created during regular geological mapping (*e.g.*, paleomagnetic sampling site EC75-02 pmag corresponds to geological data station EC75-143). The comments field in *Paleomag* cross-references the two. A subsidiary table titled *PaleomagEmslie* gives full field details of Emslie's paleomagnetic sampling sites (both for the dyke and its host rock) based on information extracted from Emslie's notes; it does not, however, contain any paleomagnetic data. To complicate matters even further, the paleomagnetic sites were renumbered for publication (*e.g.*, publication site 22 corresponds to EC75-42 pmag, which is equivalent to geological data station EC75-258).

A1.11.1.2 Author Involved

The published studies in which the author was involved are those of Murthy *et al.* (1989a, b, 1992), and Park and Gower (1996). The Murthy *et al.* studies mostly sampled mafic dykes that were found during the course of 1:100 000-scale mapping, with the exception of some of the previously known Long Range dykes. The Park and Gower (1996) study targeted the Michael gabbro in the Groswater Bay terrane, the sampling for which was done in 1982 in conjunction with a geochemical–petrological investigation of the Michael gabbro led by R. Emslie (Emslie *et al.*, 1997).

A1.11.2 UNPUBLISHED STUDIES

The unpublished material in the table *Paleomag* can be divided into two groups, namely i) a study on the Gilbert Bay dykes by McCausland *et al.* (2007) and ii) other material. At the time of writing, progress on the Gilbert Bay dyke study seems to have stalled, partly because of an emerging indication that not all the dykes necessarily belong to a single suite as was originally thought, and partly because an attempt is in progress to obtain more geochronological data.

The 'other material' comprises about 15% of the total data and involves the final batch of sites of the Murthy *et al.* studies, work on which was never completed. Most of the mafic dykes samples are late- to post-Grenvillian (L'Anse-au-Diable dykes, York Point dykes), or younger (Long Range dykes, Sandwich Bay dykes at Martin Bay, Battle Harbour dyke), or Neoproterozoic to Paleozoic supracrustal rocks (Lighthouse Cove Formation, Bateau Formation). Declination and inclination data are provided for many of the sites, except for the York Point dykes, for which the results are not available to the author. As the data were obtained some time ago, they may no longer be regarded as state-of-the-art, but they are deemed worthwhile to include as a guide for future studies. As the bulk of the dykes post-date Grenvillian orogenesis, they have good potential for yielding primary remanences.

A1.12 GEOCHEMICAL DATA

A1.12.1 SAMPLE COLLECTION

Samples collected for whole-rock geochemical analysis were generally broken up into 'bite-sized' pieces and bagged in the field, retaining only fragments without weathered surfaces. In later years of the project, samples submitted for whole-rock geochemical analysis tended to be mostly those for which geochronological or paleomagnetic investigations were planned. The residual hand samples archived by the GSNL are large enough in many cases to carry out a more broadly based, bedrock, whole-rock geochemical study of the region. Not all the originally collected hand samples are still available. In 1993, the building in which the samples were stored at the time was demolished without previously removing the stored rock samples, which, as a result, were badly scattered. Although a thorough attempt was made to recover the rocks, the pre-1993 hand-sample collection remains incomplete (the stained slabs were stored elsewhere and were not affected).

A1.12.2 COMPILATION OF DATA

Data were initially compiled into an Excel spreadsheet named *WholeRockGeochemistry_All* (*ca.* 2600). This includes all duplicate samples and controls (standards). Cells are colour-coded according to method of analysis, and separate font colours used to denote controls, duplicate, and duplicated samples. An explanatory legend accompanies the spreadsheet on a tabbed worksheet. Where multiple results were obtained for a given sample because of analysis by more than one method, all values are reported in separate columns. Analysis methods for each trace element are in analysis order as follows: atomic absorption spectrometry (AA, green), inductively-coupled plasma - optical emission spectrometry (ICPOES, yellow), ICPOES fusion digestion (ICPOESf, grey), ICP - mass spectrometry fusion digestion (ICPMSf, orange), instrumental neutron activation analysis (INAA, blue), other (*e.g.*, ion-selective electrode, x-ray fluorescence). Note that trace elements are arranged in alphabetical order based on their chemical symbol, rather than their name. Blank cells mean that no analysis was obtained for that component. Analyzed samples below detection limits are indicated by negative numbers. For the more recent samples, the value of the negative number is the accepted detection limit. The Remarks column provides (rare) details regarding specific results. The letters 'A', 'B', and 'C' are a qualitative laboratory assessment of the whole-rock major-element results. (A – excellent, B – good, C – fair). It is clarified here that elements in field Ce_ICP_Brewer, and other rare earths similarly denoted, were obtained by T. Brewer (University of Nottingham, England) during a study of the Michael gabbro that was never completed.

The spreadsheet also includes various types of anomalous samples, which are retained so as to avoid potential confusion regarding whether or not an analysis might have been inadvertently omitted, had they not been included. These anomalies are: i) rows for lab numbers that were not utilized during original numbering (*i.e.*, an analysis for that lab number never existed in the first place). In

WholeRockGeochemistry_All, this is indicated as 'No Sample' in the SampleNo field and 'This LabNo not used' in the Comments field); ii) one sample for which the station number is known, but the station's location is uncertain (US87-007); iii) six samples that have locations outside the area of the 1:100 000-scale maps, but have field numbers that are part of a sequence of field data stations otherwise within the area of the 1:100 000-scale maps (CG97-301, -302; PE82-241A, B, C, D); the CG97- samples are 'Grenvillian' rocks from western Newfoundland, and the PE82-241 samples are from the head of Grand Lake; iv) two samples that may have been mislabeled, but, for which, the problem could not be conclusively resolved; these are CG80-630 and CG80-643 – further details are given in the Comments field in table *Samples*, and; v) one sample (lab sample 640669) for which the original field identity could not be established. Information regarding the remaining samples is considered fully reliable.

A second table was created (*WholeRockGeochemistry* ArcGis file geodatabase, Excel and shapefile formats) in which records for anomalous samples were deleted, along with blank rows, and all the controls and duplicates, leaving only reliable analytical information. Various columns have also been deleted. For major elements, elemental values for Ti, Mn and P by ICP analysis, Fe, Ca and Na by INAA analysis, and calculated values for Fe_2O_3 and Fe have been deleted. The Remarks column is also removed. Trace elements consistently yielding values below detection limits have been deleted (Ir, Hg and Se – a small percentage of the samples were analyzed in the first place). Cells left blank in the *WholeRockGeochemistry_All* spreadsheet have been infilled with a dummy value (-99) for the GIS formats, so as to avoid being inadvertently assigned a value of 0. Gain-on-ignition (GOI) text in the loss-on-ignition (LOI) column was replaced by 0.00 to keep the column numeric. For some elements, as analytical techniques improved, results were obtained for more recently analyzed batches that could not be delivered for samples submitted earlier. If deemed worthwhile, the data gaps could be eliminated, as powders for all samples are retained by GSNL. In *WholeRockGeochemistry*, results for each element are contained within a single column, and 'surplus' data excluded. Where the same samples had been analyzed by multiple methods, then the best data were used, according to evaluation of controls (standards). Lacking a choice, whatever data available was included. In consequence, the results for some elements reflect a combination of analytical methods. Trace element data are organized alphabetically by chemical symbol in two sequences. The first sequence includes elements for which data are available for most of the samples (Ba, Ce, Cr, Cu, F, Ga, La. Li, Mo, Nb, Ni, Pb, Rb, Sr, Th, U, V, Y, Zn, Zr), or a significant minority of them (As, Be, Cd, Co, Dy, Sc). The second sequence includes results for elements only available for a few samples (Ag, Au, Bi, Br, Cs, Eu, Er, Gd, Ge, Hf, Ho, Lu, Nd, Pd, Pt, Sb, Sm, Sn, Ta, Tb, Tm, W, Yb).

A1.12.3 VALIDATION OF ANALYTICAL DATA

A1.12.3.1 Comparisons Between Analytical Methods

For some batches of samples, several elements were analyzed by more than one method. These are Ti(icp) *vs.* TiO_2, Fe(icp) *vs.* Fe_2O_3 and FeO, Mn(icp) *vs.* MnO, Ba, Ce, Cr, La, Li, Pb, Rb, Sr, V, Zn, Zr. Here, 'icp' is equivalent to ICPOES and 'icpf' to ICPOESf. Where data are sufficient, results obtained by alternative methods were compared graphically. For the most part, excellent straight-line, linear correlation demonstrates very effectively that both methods of analysis yielded consistent results (*see* tabbed worksheet in 'method-comparison graphs' in *WholeRockGeochemistry_All*). Scatter from linearity is evident, to some extent, in Ba(aa) *vs.* Ba(icp), and, more acutely in Zr(icp) *vs.* Zr(icpf). The deviations for Ba are not sufficient to compromise the validity of the results, but those for Zr pose a greater problem.

A1.12.3.2 Comparisons Between Duplicate Samples

Where data are sufficient, samples analyzed in duplicate were compared graphically for each geochemical component. Excellent linear correlation demonstrates that precision is high for most elements (*see* tabbed worksheet in 'duplicate data and graphs' in *WholeRockGeochemistry_All*). The most scatter is seen for Cr(icpf), F, Ga(icp), Nb(icp), Pb(aa) and Th(icp), although, even for these results, precision is still good. It should be noted that reproducibility is excellent for both Zr(icp) and Zr(icpf), even though results from the two methods may differ.

As done for the method-comparison graphs, spurious results were identified and values checked against original data, resulting in the elimination of data-entry errors. Those that remain have been investigated, but no unequivocal explanation found (although guesses can be made). For example, duplicate results for F from sample NN80-622 were 696 and 1653 ppm. The original results were hand written, so the roughly 1000 ppm difference is probably either because a 1 was added or omitted from one or other of the results. For one spurious Li result, the duplicate AA results were 4.6 and 25.8 ppm. In this case, the sample was also analyzed by ICP, which yielded two identical results of 12.9 ppm. These isolated examples are far too rare to compromise the integrity of the database.

A1.12.3.3 Comparisons with Controls (Standards)

Data for controls (both accepted values and those obtained when analyzed as 'unknowns') are compiled in

WholeRockGeochemistry_All under tabbed worksheet 'Controls'. The results are summarized, rather informally, below.

i) AGV-1 used for major-element data (icpf), Ba(icpf), Cr(icpf), Zr(icpf). Major element data good. Cr(icpf) poor as detection limit for method (*ca.* 50 ppm) is above 10 ppm level of standard. Ba(icpf) poor (analyzed 1330 *vs.* 1230 ppm accepted. Zr(icpf) good – analyzed values 222–238 ppm close to 227 ppm accepted value.
ii) AL-1 used only as a control for major elements. Good except analyzed TiO_2 is slightly high (0.02–0.04%), compared to accepted value of 0.01%.
iii) BCR-1 used for major elements, Cr(icpf) and Zr(icpf). Major elements and Zr good but Cr erratic (0–28 ppm *vs.* 16 ppm accepted value).
iv) BHVO-1 used for major elements, Cr(icpf) and Zr(icpf). All acceptable, except one aberrant MgO value, suspected to be due to incorrect entry on paper data sheet.
v) BX-N used for major elements, Cr(icpf) and Zr(icpf). Major elements good. Cr very high (731 ppm *vs.* 280 ppm accepted value). Zr high (803 ppm *vs.* accepted 550 ppm).
vi) DR-N used for major elements, Cr(icpf) and Zr(icpf). Major elements good. Cr very erratic (0–9 ppm *vs.* 40 ppm accepted value). Zr slightly high (138–143 ppm *vs.* 125 ppm accepted value).
vii) DT-N used for major elements. All good.
viii) FK-N used for major elements, Cr(icpf) and Zr(icpf). Major elements good. Cr and Zr too low in standard to be of value.
ix) G-2 used for major element data (icpf), Ba(icpf), Cr(icpf), Zr(icpf). All good except Cr, which is too low in standard to be of value.
x) GS-N used for major elements, Cr(icpf) and Zr (icpf). Cr(icpf) high in analyzed samples (115– 133 ppm) compared with accepted value of 55 ppm).
xi) GSP-1 used for major elements. All good.
xii) IF-G used for major elements. All good. Some aberrant Fe results due to all Fe being reported as Fe_2O_3, but FeO not analyzed.
xiii) MAG-1 used for major-element data (icpf), Ba(icpf), Cr(icpf), Zr(icpf). Apart from one anomalous Cr(icpf) result, all reasonable.
xiii) MRG-1 used for major and trace elements, in many cases by more than one method, thus allowing for method selection. Major elements all good. Ag by AA seems O.K. on limited data. As and Au too low or no standard value. Ba better by ICP (not ICPF) than AA or INAA. Cr low by AA and ICP but ICPF results erratic and INAA results high. Cu equally good by AA or ICP. Ga appears to be high compared to accepted values. La good by ICP or INAA. Li best by ICP. Pb better by ICP. Sr equally good by AA or ICP. Th good by ICP or INAA. V better by ICP. Zn good by AA or ICP. Zr better by ICP than ICPF; poor by INAA.
xv) QLO-1 used for major elements, Cr(icpf) and Zr (icpf). All reasonable, but Cr too low to be of value. One analyzed Cr(icpf) result anomalously high.
xvi) RGM-1 used for major elements, Cr(icpf) and Zr(icpf). Two analyzed results for Cr anomalously high, but low concentration level.
xvii) SCO-1 used for major elements, Ba(icpf), Cr(icpf) and Zr(icpf). One analyzed result for Cr anomalously below detection limit. All major-element values for one analysis are slightly low.
xviii) SDC-1 used for major elements, Ba(icpf), Cr(icpf) and Zr(icpf). Cr very erratic – unusable.
xix) STM-1 used for major elements, Cr(icpf) and Zr(icpf). Cr erratic and Zr a bit high.
xx) UB-N used for major elements. One anomalous Na_2O value, which could be due to erroneous manual data entry on paper sheet.
xxi) VS-N used for major elements, Cr(icpf) and Zr(icpf). O.K. but based on provisional standard values. No P_2O_5value.
xxii) SY-2. Major elements good. Ag O.K. Ba better by ICP than AA, or ICPF or INAA. Cr O.K. by AA or ICP. Erratic by ICPF or INAA. Cu O.K. by AA or ICP. Li good by AA or ICP. Mo better by AA than ICP or INAA Ni a bit low by both AA and ICP Sr better by ICP than AA.

A1.13 GEOCHRONOLOGICAL DATA

Geochronological data are contained in four tables, i) U–Pb, ii) Sm–Nd, iii) Rb–Sr and iv) K–Ar and Ar–Ar. On the 1:100 000-scale geological maps, boxes containing isotopic data are colour-coded according to isotopic system, with 'cooler' colours being assigned to isotopic systems characterized by lower closure temperatures. In cases where the same sample has been investigated by several different methods, the rock type is only listed in one isotopic box to save space. Joined boxes indicate analysis of the same sample; a small gap between boxes denotes two samples.

Where the data are represented graphically in isochron–errorchron figures, discordia plots or step-wise heating graphs, these have been scanned and hyperlinked from the 'ImgPathHyp' field in the geochronological ArcGIS, Excel and shapefiles. Cross-reference is also given to the geochronological database in the GSNL Geoscience Atlas. In all tables, the rock type investigated and the reference source are included. Further details regarding some samples are provided in the Comments field in each table.

A1.13.1 U–Pb GEOCHRONOLOGICAL DATA

All U–Pb geochronological data are included in one table named *GeochronUPb*.

In contrast to the other geochronological tables, details of analytical data are not included, as all are available in published material. In addition to reporting interpreted U–Pb ages, the table also provides information on the mineral dated, which mineral fractions were included in the regression, the nature of the intercept (*e.g.*, concordant, nearly concordant, upper, upper with a long projection, lower, lower with a long projection), and interpretation of age obtained (*e.g.*, cooling, detrital, emplacement, inheritance, metamorphism, or undefined Pb loss).

A1.13.2 Sm–Nd GEOCHRONOLOGICAL DATA

All Sm–Nd geochronological whole-rock data are included in one table named *GeochronNdSm*. Mineral data are not included. In addition to the originally reported analytical data (Sm, Nd, ^{147}Sm/^{144}Nd, ^{143}Nd/^{144}Nd) and values for εNd t and T_{DM} derived by the analyst, the table provides confirmatory recalculated εNd t and T_{DM} values calculated by the author using DePaolo's (1981) depleted-mantle-model method. Most of these values are near identical to those reported originally except for values reported by R. Creaser (personal communication), who did not use the DePaolo model. The table also indicates the relationship between the sample used for Sm–Nd analysis and that used for dating (same sample, same locality, same unit, or regional correlation – *i.e.*, in decreasing order of reliability). It also classifies rocks into age and lithological groups.

A1.13.3 Rb–Sr GEOCHRONOLOGICAL DATA

All Rb–Sr geochronological data are included in one table named *GeochronRbSr*.

Most of the table comprises a compilation of the standard Rb–Sr geochronological analytical data (Rb, Sr, ^{87}Rb/^{86}Sr, ^{87}Sr/^{86}Sr), and the initial Sr ratio and age from the isochron/errorchron regression. Much of this data is not formally published, although is publically available in internal government reports.

A separate initial ratio is given for individual samples, based on the age of the rock subsequently obtained for many of the samples by U–Pb geochronology. This approach avoids problems involved in assuming a group of samples to be truly cogenetic, as well as awkwardness in cartographic representation of a single value (namely an initial ratio) that is based on multiple localities.

A1.13.4 K–Ar AND Ar–Ar GEOCHRONOLOGICAL DATA

K–Ar and Ar–Ar geochronological data have been combined into one table named *GeochronArK*. Included are whole-rock K–Ar ages, biotite and hornblende K–Ar ages, biotite and hornblende Ar–Ar plateau and total gas ages, one muscovite Ar–Ar plateau age, and two muscovite K–Ar ages. All are published results, except hornblende Ar–Ar ages obtained from 10 samples by R. Dallmeyer and four biotite and hornblende K–Ar ages from 2 samples obtained by the Geological Survey of Canada, for which permission to include has been given. K–Ar ages have been recalculated according to decay constants recommended by Steiger and Jager (1977), using Dalrymple's (1979) conversion table.

Some of the originally reported location co-ordinates are inaccurate or incorrect; the Comments column provides clarifications.

A1.14 MISCELLANEOUS DATA TABLES

A1.14.1 GEOTHERMOBAROMETRIC DATA

Geothermobarometric data are reported in a table named *Geothermobarometry*. The table includes information on rock type investigated, geothermometer or geobarometer utilized, publication reference to its original proponents, the temperature and pressure obtained, and the publication source for the results (some not previously published).

A1.14.2 OXYGEN ISOTOPIC DATA

The author is only aware of one oxygen isotopic investigation that includes oxygen isotope data pertinent to eastern Labrador. Seven results are listed in a table named *OxygenIsotopeData*. The study applies to the Alexis River anorthosite and was carried out by Peck *et al.* (2010).

A1.14.3 DYKES

A subset of rocktype data for mafic dykes is compiled in table *Dykes*. This provides azimuth and dip of dykes and the suite to which they belong.