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ANALYSIS OF SELECTED LIMESTONE SAMPLES FROM ILLAMNA AND
BRUIN BAYS, ILLAMNA QUADRANGLE, ALASKA

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Iliamna Quadrangle, Alaska

By Robert L. Detterman

Thirteen samples of limestone from the Kamishak Formation of Late Triassic age were selected for analysis to determine their suitability as a possible source for cement raw materials. The samples were taken from along two bays on the west side of Cook Inlet. The bays afford well-protected anchorage, and the deposits are at sea level and accessible to water transportation. Other deposits of limestone in the Kamishak Formation are located inland from Cook Inlet, but were not sampled.

The locations of the samples are shown on figures 1, 2, and 3; the analyses on Table 1. The samples analyzed were composite chip samples taken at 10-foot intervals across the outcrop; each sample consisted of about 2 pounds of rock.

The samples from Iliamna Bay (Fig. 2) indicate that at least part of the deposit is of sufficient purity to be used as a cement raw material. The deposit is large, 450 to 500 feet of interbedded limestone and greenstone, but possible tonnage has not been determined. The deposit is cut locally by igneous dikes, but any alteration appears to be confined to the immediate vicinity of the dikes and probably does not effect a significant amount of limestone. The Kamishak Formation continues to the north shore of Ursus Cove, but the rocks exposed at that locality are a different facies and contain much more silica. No samples from Ursus Cove were analyzed. /a

The Bruin Bay deposit (Fig. 3) is small and contains a rather high percentage of silica (Table 1). The limestone is mainly confined to the inside of Bruin Bay, while the part of the formation exposed on the outer side of the peninsula is mainly chert.

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Figure 1
Index map showing location of Iliamna B-3 (Bruin Bay) and C-2 (Iliamna Bay) quadrangles, Alaska

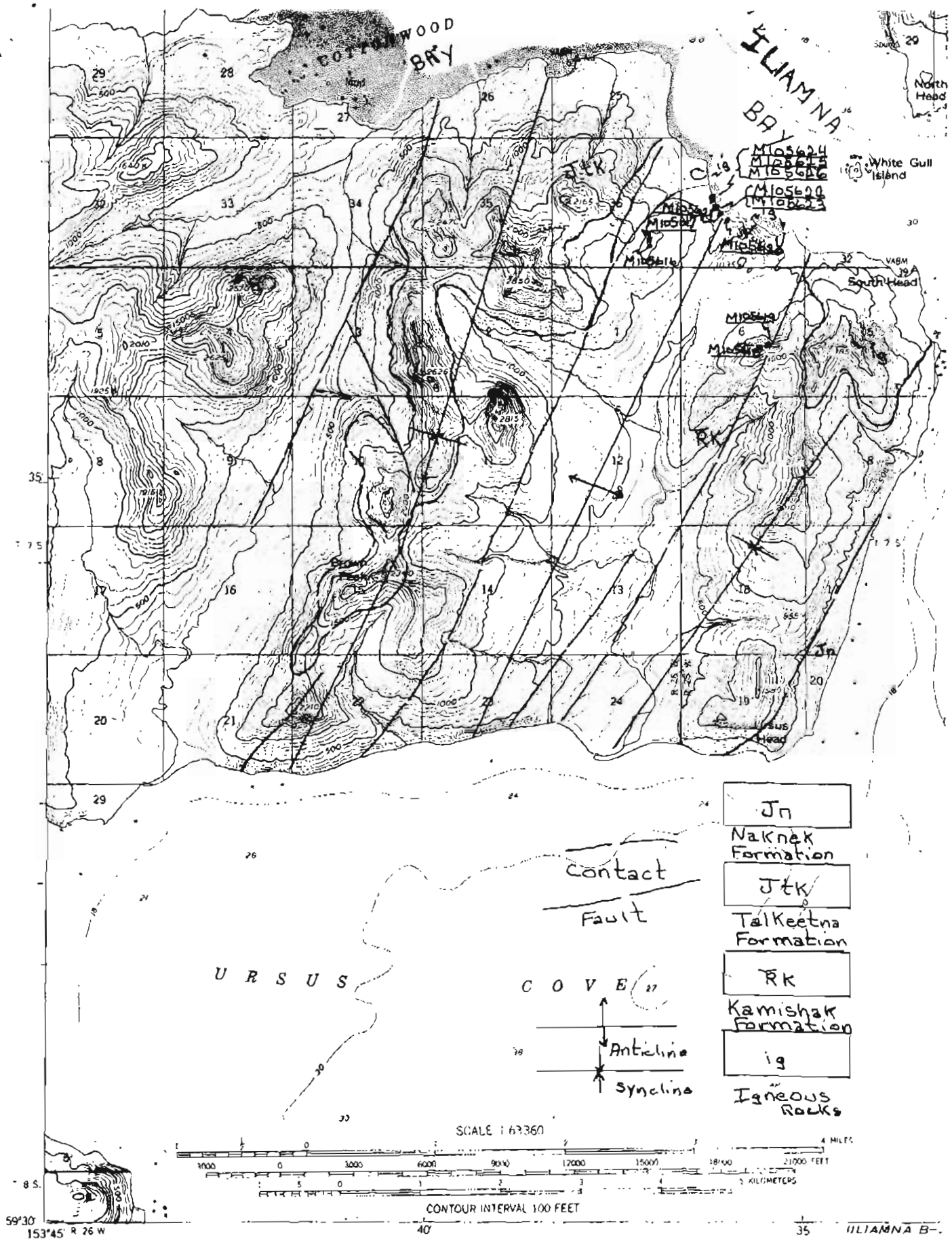


Figure 2
Iliamna Bay, Alaska, showing location of limestone samples

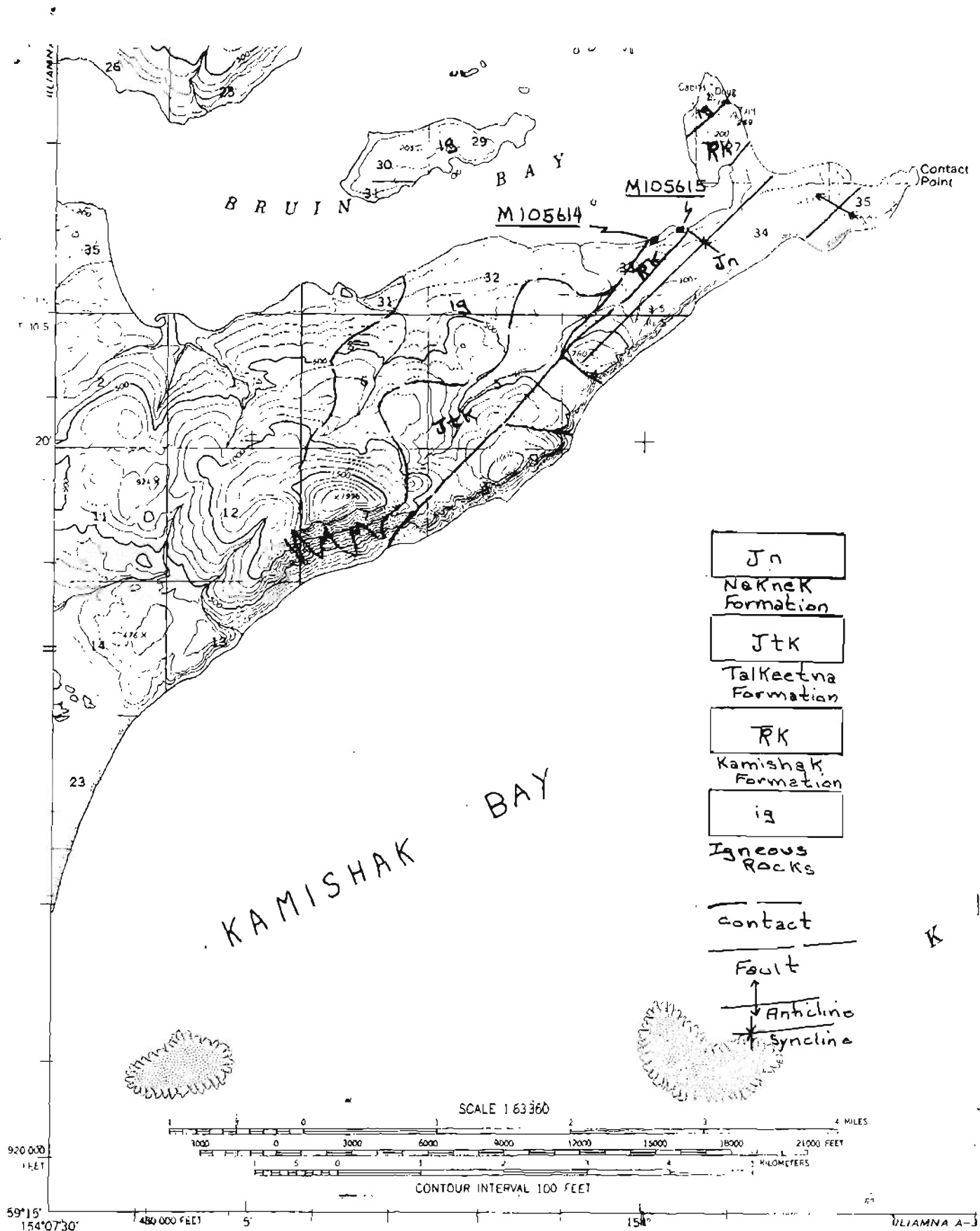


Figure 3

Bruin Bay, Alaska, showing location of limestone samples

Table 1. Chemical, X-ray fluorescence, and atomic absorption spectroscopy analysis of selected limestone samples from Iliamna and Bruin Bays, Alaska

Analysts: C. O. Ingamells, M. J. Cremer, L. B. Schlocker, and B. P. Fabbi.

SO₃, SrO, BaO, P₂O₅, Fe₂O₃, and total sulfur determined by X-ray fluorescence; soluble CaO determined by atomic absorption spectroscopy; all other determinations by chemical analysis.

Sample No.	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	CaO	Na ₂ O	K ₂ O	MnO	TiO ₂	P ₂ O ₅	SO ₃	Total Sulfur as S	SrO	BaO	H ₂ O	Ignition loss	Total	Soluble CaO	Soluble CO ₂
M105614	30.86	2.96	2.17	1.43	43.20	0.34	0.31	0.14	0.14	0.03	1.25	0.04	0.04	0.01	0.12	16.57	99.45	39.9	16.57
M105615	16.95	4.63	3.11	1.45	43.80	0.64	0.29	0.13	0.24	0.04	0.18	0.07	0.07	0.02	0.05	27.41	98.46	35.6	27.41
M105616	14.19	3.48	2.25	2.32	42.21	0.53	0.11	0.12	0.14	0.04	0.13	0.06	0.06	0.00	0.08	34.42	100.00	41.6	33.40
M105617	5.26	1.21	0.69	1.49	50.40	0.10	0.06	0.07	0.04	0.04	0.13	0.06	0.06	0.00	0.05	40.50	100.05	50.5	40.02
M105618	12.33	0.72	1.17	2.04	47.85	0.14	0.00	0.05	0.07	0.04	0.10	0.09	0.09	0.00	0.07	35.43	100.03	45.3	34.90
M105619	11.08	0.64	1.00	2.02	48.60	0.15	0.00	0.05	0.05	0.04	0.07	0.09	0.09	0.00	0.04	35.67	99.46	45.8	35.77
M105620	32.33	3.69	2.14	1.22	33.12	1.14	0.73	0.07	0.15	0.02	1.15	0.07	0.07	0.06	0.08	24.52	100.41	31.3	24.28
M105621	1.39	0.49	0.19	0.55	54.18	0.12	0.12	0.03	0.02	0.03	0.13	0.05	0.05	0.00	0.01	42.74	100.04	53.2	42.55
M105622	1.15	0.38	0.40	0.61	54.40	0.11	0.03	0.04	0.03	0.03	0.10	0.05	0.05	0.00	0.02	42.87	100.20	54.9	42.67
M105623	28.63	0.59	0.54	0.47	38.91	0.13	0.00	0.06	0.02	0.04	0.25	0.04	0.04	0.00	0.03	29.91	99.59	38.3	30.14
M105624	2.54	0.44	0.41	0.85	53.17	0.09	0.12	0.03	0.03	0.03	0.13	0.04	0.04	0.00	0.04	42.04	99.92	53.1	41.98
M105625	1.59	0.39	0.15	0.41	54.31	0.15	0.07	0.02	0.02	0.03	0.10	0.04	0.04	0.00	0.04	42.71	99.99	54.6	42.66
M105626	14.18	5.38	2.10	1.74	40.91	0.32	1.52	0.04	0.17	0.04	0.70	0.05	0.05	0.02	0.07	31.63	99.40	41.4	31.16