

BEAT TRINIDAD'S CONTROL PROBLEM: OCCUPY THE HIGH GROUND

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Trinidad suffers from too many surveys being made without connection to the national control network. The survey profession has recognised this for a long time, and there have been calls for the Department of Lands and Surveys in Port of Spain to extend and densify the control network, chiefly by traversing between triangulation stations. In fact this happening, but it is a slow and expensive process, and it will be many years before the control is dense enough to allow all the minor surveys, mainly cadastral ones, to be connected to it or based on it. However, there is an alternative approach to the problem particularly suitable for the East-West Corridor, the ribbon of urban and suburban development extending eastward from Port of Spain and lying at the foot of the mountains of the Northern Range. Because this area contains the greater part of the population of the island, it is also the area of greatest demand for survey and for survey control.

The Northern Range is the great dominating feature of the East-West Corridor, looming high above it is places. It is ideal terrain for triangulation or for tellurometer traversing, and with sufficient stations on the hills, a surveyor could obtain a position-fix almost anywhere in the plains below by observing a simple resection. The addition of a few well defined features down below, e.g. the spire of the Roman Catholic church at Barataria or the Caroni distillation tower, would make the task that much simpler, and modern calculators make the computations easy. This then provides an alternative to running lengthly traverse along crowded busy roads — well chosen visible triangulation stations on the southern face of the hills.

The key to the usefulness of such stations is that they be visible, which requires permanent signals, which have been totally lacking hitherto. The University of the West Indies has made a modest start to the establishment of such a system by erecting a large steel tripod on Chico, station 1160A, above Champ Fleurs, and by coordinating the two topmost front corners of the reflector screen beside station 1007, Mount St. Benedict, just to the west of the monastery. These are existing triangulation stations, but the Department of Land Surveying of the university plans to establish new points above Tunapuna and on Victory Heights, in addition to stations on the Faculty of Engineering and the Caroni distillation tower. When established and permanently signalled, these points will allow simple resections to be observed in most parts of the stretch from Trincity to Uriah Butler Highway.

Right at the navel of this piece of country lies the university campus, and of course this is quite deliberate, since the university needs the points for teaching surveyors, not for making surveys. Nonetheless, it is intended to make the university scheme part of the national control net and to provide coordinates and station descriptions to the Department of Lands and Surveys, so that surveyors at large may take advantage of them. However, the university has limited resources, and will therefore establish only as many stations as it needs for training purposes. So modest is its programme that it was only with the generous help of the National Security in providing a helicopter that the signal on Chico was built. The university scheme will therefore provide only a nucleus or pilot scheme for the signalling of triangulation sections and for establishing some additional ones.

One signal is an inadequate basis for costing the exercise, but it is confidently asserted that the cost of erecting some permanent signals and of running tellurometer traverse would be less than running traverses up all the side roads off the Eastern Main Road and the Churchill-Roosevelt Highway, and it would certainly be very much quicker, which would solve part of the control problem.

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The UTM coordinates of the signalled stations are as follows:

1160A	Chico	1 179 843.24	671 695.26
1007	Mt. St. Benedict	1 179 103.20	674 778.67
1007A	Screen W	1 179 105.34	674 783.05
1007B	Screen E	1 179 109.09	674 791.43

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1. BARKER, J.J. "Heat Transfer in Fluidised Beds", Ind. Eng. Chem. 1956, 57 (5), 33-39.
2. MORRIS, J.E. and GEWARTOWSKI, J.W. "A 1W 6Ghz IMPATT Amplifier For Short Haul Radio Applications", Proceedings of the IEEE International Conference on Communication, Washington D.C., 1973, Vol. 1 pp. 8-27.
3. GAJRAJ, A.M. "Numerical Studies of Non-Newtonian Flows", Ph.D. Thesis, University of Exeter, 1973.
4. CUTTERIDGE, O.P.D. "Computer Synthesis of Lumped Linear Networks of Arbitrary Structure" in SKWIRZYNSKI, J.K. and SCANLON, J.O. (Eds.): Network and Signal Theory (Peter Peregrinus, 1973) pp. 105-111.

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