

5

File copy

REFERENCE NO: 4/7/06/3

**IN THE MATTER OF AN ARBITRATION
TELECOMMUNICATIONS AUTHORITY OF TRINIDAD AND TOBAGO
SECTION 82 OF THE TELECOMMUNICATIONS ACT 2001**

BETWEEN

DIGICEL (TRINIDAD & TOBAGO) LIMITED

Complainant

AND

**TELECOMMUNICATIONS SERVICES
OF TRINIDAD AND TOBAGO LIMITED**

Respondent

RULING

It would be remiss of me if I did not extend at the outset my sincere apologies to all the parties, including the Telecommunications Authority, for the long delay in delivering my ruling on this matter. Circumstances beyond my control have severely affected my ability to conclude this aspect of the matter at an earlier date.

The Award

In my Award given on the 16th July 2007, I acknowledged that I required technical advice from a technically competent professional appointed by the Authority to assist me in the process of analysis and verification of the confidential invoices submitted by TSTT for my consideration. This appointment was to be made in the context of my decision that Digicel was not entitled to reimbursement from TSTT of the amount paid to TSTT in November 2005 on the grounds advanced by Digicel in its Complaint. However, I recognized that, if after receiving the benefit of such technical advice, I found that any part of the equipment purchased by TSTT and listed in the said confidential invoices was

not necessary, I would have to order the reimbursement of the cost of any such equipment, plus interest on that amount.

The Audit Exercise and Expert's Report

In compliance with my direction that TSTT provide Digicel with a list of the equipment it purchased with the monies paid by Digicel, TSTT submitted to Digicel an Equipment List on the 20th July 2007. By letter dated 25th July 2007, Digicel's Attorneys-at-Law submitted a request for a physical audit of the equipment on that List. By this letter, they contended that "it would be essential that there be a physical audit of this equipment.....to verify:

- (a) That it is actually in place;
- (b) That it is functioning;
- (c) That it is necessary and is being used for interconnection with Digicel."

However, on the 25th July 2007, a corrected Equipment List was submitted to Digicel by TSTT's Attorneys-at-Law and by letter dated 2nd August 2007, Digicel's Attorneys-at-Law reiterated their request for a physical audit which, in their opinion, was now absolutely necessary in the light of the two different and to some extent contradictory lists.

Having considered the correspondence from the parties, on the 27th August 2007, I ruled that the request by Digicel for a joint physical audit should be granted. I also directed that the joint audit should be attended by representatives of TSTT, Digicel and an expert from the TATT. The audit was to be effected within two weeks and an agreed equipment list should be verified by the parties within ten (10) days after the completion of the audit. In the event that Digicel disagreed with the inclusion of any particular item of equipment in the agreed equipment list, they should identify such item(s) in a separate list and submit their grounds of objection for the consideration of the expert appointed by TATT within the same period of ten (10) days. Thereafter, the expert was required to submit for my

consideration a written report on the physical exercise, the agreed equipment list and the disputed equipment list, if any, and the grounds of objections from Digicel, with any recommendations which he considered helpful and necessary as to the inclusion of any items in the Agreed List. Upon receipt of the written report of the expert, I would notify the parties within seven (7) days of the List of equipment which I would submit to another technical expert for his/her guidance on the reasonable cost of the equipment included in the Agreed Equipment List.

The physical audit was eventually conducted on September 10, 2007 led by Mr. Satwant Singh, the technical expert appointed by TATT. On the 18th September 2007, Mr. Singh submitted his Report to me. According to his Report, he conducted the audit with the List (the corrected List) submitted by TSTT in his possession and he placed a tick next to each item of equipment that was seen and verified. Attached as a Schedule to his Report was a list of equipment prepared by Mr. Singh which he described as “the Agreed List”. According to the legend on each page of that Agreed List, items marked with a tick were seen and verified, items marked with an X were not seen but are verified and items not marked were not seen and were not verified.

Digicel’s Objections

On the 25th September 2007, Digicel submitted its extensive objections to the Agreed List produced by the technical expert, Mr. Singh, together with several Appendices and Documentary Exhibits, all of which I have read. Those objections, as set out from page 10 onwards, fall into two principal categories:

- (1) A large number of items on TSTT’s list should never have been charged to Digicel as they did not fall within the defined category of “interconnection specific equipment” required to effect physical interconnection between Digicel and TSTT;

- (2) Digicel has been overcharged for some of the items that were properly required to effect physical interconnection and that TSTT would have been in a position to negotiate significant discounts off the list prices of the interconnection specific equipment..

Attached to those Submissions were, inter alia, a List of Non-Disputed items (Appendix 3) and a List of Disputed items (Appendix 4) and these were submitted to inform the technical expert in terms of the recommendations to be made by him to me as to the inclusion of items in the Final List of Equipment to be submitted to another expert for his opinion on pricing.

In support of its first ground of objection that a large number of items on TSTT's List did not fall within the defined category of interconnect specific equipment, Digicel made the following submissions, inter alia:

- (a) The category of interconnect specific equipment should not include any items of equipment required to effect interconnection between TSTT and other telecommunication service providers;
- (b) The only equipment that falls within the defined category of interconnect specific equipment is equipment within "the joining service", that is equipment up to the multiplexer, but no further;
- (c) The TSTT list made it clear that TSTT had charged Digicel for considerably more equipment over and above the equipment required to effect the joining service;
- (d) It is illegal for TSTT to charge Digicel for equipment over and above the joining service when it has charged other interconnecting parties only for equipment within the joining service;
- (e) The proper list of equipment containing those items of equipment falling within that definition of interconnect specific equipment is set out in the Non-Disputed List of Equipment attached as Appendix 3;
- (f) Without prejudice to its principal submission in relation to the definition of interconnect specific equipment, much of the equipment falling outside the

joining service is being shared with Laqtel and therefore it must follow as a matter of course that TSTT has overcharged Digicel by requiring it to pay for equipment that TSTT has installed for its own benefit and that of third party operator(s);

- (g) The optical distribution frame (ODF) used to hold the three fibre panels associated with Digicel was entirely unnecessary.

On its second ground of objection that it has been overcharged for some of the items of equipment which fall within the definition of interconnect specific equipment, Digicel submitted as follows:

- (a) TSTT had levied charges on Digicel that were excessive compared to the charges levied with other telecommunication providers;
- (b) Since Digicel did not seek to connect to TSTT's NGN switch and TSTT refused to allow Digicel to interconnect to its existing network via the DMS 200 Tandem switch, TSTT cannot rely on an argument that additional equipment was required over and above the joining service;
- (c) To the extent that any equipment within the joining service is being shared with and/or used by Laqtel and/or another operator, then Digicel cannot be expected to pay for more than its proper and fair share of such equipment. The appropriate amount that should be levied on Digicel is 50% of the cost of such items of equipment, provided that such sharing relates solely to two operators.

Digicel has also made submissions with regard to the pricing of individual items of equipment on the TSTT list and discounts to which TSTT ought to have been entitled. Since the issue of pricing did not fall within the scope of the audit exercise for which Mr. Singh was retained to express his expert opinion, I consider that these submissions were premature and irrelevant and I have disregarded them in resolving the current issue of what items should or should not be included in the list of equipment for which Digicel must pay.

TSTT's Reply

TSTT replied to Digicel's submissions on the 3rd October 2007 and has made the following points:

- (a) The cost of items specified in the list as being shared with Laqtel were split proportionately between Digicel and Laqtel and the cost split was provided for by Nortel and is evidenced in the confidential invoices;
- (b) On November 25, 2005, Laqtel paid to TSTT the sum of \$1,135,002.00 as payment for its own interconnection specific equipment and this was disclosed in these proceedings;
- (c) The supply of unit prices to Digicel was a non-issue since it was the role of the Authority to verify the amounts charged by TSTT;
- (d) TSTT's witness, Natasha de Coteau, in her witness Statements established that Digicel was not required to pay for anything other than interconnect specific equipment and that Digicel was not charged for the expansion of TSTT's core network. Her evidence as to what constituted interconnect specific equipment was unchallenged in cross-examination and remained un-contradicted;
- (e) Digicel's allegation that interconnection is limited to all equipment up to the multiplexer amounts to a new allegation of fact challenging the evidence of TSTT witnesses, which went unchallenged at the hearing of the arbitration;
- (f) The payments by other service providers for interconnection equipment was dependent on the dimensioning requirements and traffic forecasts of each service provider. In many instances Digicel's forecasts were 10 to 20 times over that required by the other concessionaires and that would account for the differences in pricing provided by Nortel;
- (g) Digicel has not at any time after it received the Nortel budgetary proposal or during the arbitration proceedings indicated that the equipment contained therein ought not to constitute interconnect specific equipment;

- (h) Digicel should not be permitted at this stage to submit that they should have been interconnected to TSTT's existing network and not its NGN network since Digicel was well aware since the 9th September 2005 that TSTT was decommissioning its existing network and that it would be using the NGN network for interconnection;
- (i) Digicel's contention that it should only pay for what is on the OM3500 and IRM associated therewith was never put to Natasha de Coteau in cross-examination as a viable proposition and therefore should be disregarded;
- (j) The ODF frames were purchased to house Digicel's and Laqtel's equipment to facilitate interconnection with both parties.

TSTT also made submissions in reply to Digicel's submissions on pricing and discounts but, having regard to my earlier ruling that Digicel's submissions are premature and irrelevant to the present exercise, I have also ignored these submissions in coming to my decision on the present issue.

Digicel's Reply to TSTT's Reply

By letter dated 5th October 2007, Digicel requested an opportunity to briefly respond to TSTT's submissions.

By letter dated 5th October 2007, TSTT objected to Digicel being permitted to make any further submissions.

On the same day, Digicel, in what appears to an attempt to preempt any possibility that I may not permit them to make any further submissions, responded to the objections by TSTT's Attorneys and made its further submissions.

In the normal course of events, I would have made some comment on this strategy but, having regard to the length of time it has taken me to deliver my ruling on

this issue, I have decided, in the interest of giving full consideration to all arguments raised by the parties, to take into account the further submissions of Digicel only as such submissions relate to the contents of Mr. Singh's Report of the audit exercise and not as they might relate to the issue of pricing.

Analysis of Submissions

Before moving on to the expert, Mr. Singh's Report on these submissions, I want to assure the parties that, having regard to their extensive submissions, I have carefully reviewed the Complaint, the Submissions, the evidence and the several documents referred to in both submissions. I have done so especially because of the objections taken by TSTT (only on matters that do not relate to the issue of pricing) that I should not permit Digicel to raise certain matters at this stage on the grounds that they were seeking to introduce new evidence and to introduce new issues that were either outside the ambit of my terms of reference or were not argued at the hearing.

On the basis of that review, I have made the following observations:

- (1) Digicel's submission that interconnect specific equipment is restricted to the equipment within the "joining service", (equipment up to the multiplexer and no further) was not made at the hearing of this arbitration. Further, that contention was not put to either Lisa Agard or to Natasha de Coteau in cross-examination;
- (2) At the hearing, Digicel did not cross-examine Lisa Agard or Natasha de Coteau on any aspect of the Nortel Budgetary Proposal or make any submission in relation thereto to the effect that the equipment described therein was not interconnect specific equipment;
- (3) Without the benefit of any information as to the actual equipment purchased by TSTT for other interconnecting parties, I cannot rely on the information provided by Digicel to establish a substantial disparity

between the costs charged to Digicel and the costs charged to other interconnecting parties to come to a conclusion that TSTT acted illegally towards Digicel or that its charges to Digicel were excessive;

- (4) Having perused the Confidential Invoices submitted by TSTT and reviewed the evidence of Lisa Agard, I am satisfied that Digicel and Laqtel were separately charged for interconnect specific equipment based on separate Budgetary Proposals from Nortel. Further, I am satisfied that the equipment which is shared between Laqtel and Digicel was not paid for Digicel only and that, in fact, the cost of the equipment supplied by Nortel was shared between Digicel and Laqtel;
- (5) Digicel was made aware since September 2005 that TSTT intended to decommission its DMS 200 Tandem Switch and to connect Digicel to its NGN network and that additional equipment would necessarily be required;
- (6) Digicel did not put to Natasha de Coteau in cross-examination that it should only be charged for the OM3500 and the Installation Related Materials (IRM) associated therewith.

The Expert's Post Audit Report

On the 6th November 2007, Mr. Singh submitted his Post Audit Report, a copy of which is annexed hereto as Appendix I. By this Report, Mr. Singh has advised me as follows:

- (1) The two BBSTP's located at Nelson Exchange and at Couva were verified in the audit as equipment purchased for the purpose of interconnection and that it is quite usual and advisable for two BBSTP's to be installed and operational; the Gateway Controller converts the Internet Protocol format into a format compatible with the CS2K and if the BBSTP and the GWC

were not installed, it would be impossible for Digicel's customers to make calls to TSTT's customers and vice versa;

(2) If the OM3500 were not installed, there would be no voice channels through which telephone conversations could be conducted between customers of TSTT and Digicel;

(3) The Communication Server 2000 is a switch which, on receipt of a signal from one network, connects both TDM and NGN networks. It consists of the Extended Architecture Core (XA-Core) and the GWC, supports the Passport PVG in the performance of its functions;

(4) The Passport 15000 PVG (PP-PVG) provides gateway services between the TDM voice environment and the IP (NGN) data environment. The PVG works in conjunction with the CS2K and the GWC forming a logical Succession Node. All bearer traffic switching media and voice services are handled by the PVG;

(5) All Installation Related Materials (IRM) for OM3500 and CS2K must be extremely durable to ensure that all the equipment outlined in the Agreed List is adequately bolstered in the appropriate position. The IRM manufactured by Nortel are known to be durable. Therefore, the IRM are just as critical as all the other items of equipment for the purpose of interconnection with Digicel

The Ruling

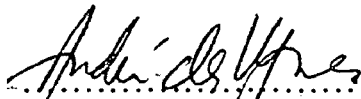
Based on this Report, I am of the opinion, and I so rule, that, subject to the stipulations specified hereunder, all the equipment described in the Agreed List prepared by Mr. Singh and dated 18th September 2007 and marked with a tick and

an X and excluding the items not marked which were not seen and verified should now constitute the Final List of Equipment (annexed hereto as Appendix II) to be submitted to a technically competent professional to analyse and verify, for my assistance, the invoices and other documents contained in the Confidential Bundle. This ruling is subject to the following stipulations:

- (a) In order to appreciate the context in which he is being asked to express an opinion on the prices charged to Digicel by TSTT, the professional should be provided with all such documents as he may reasonably require, including the Final Budgetary Proposal of Nortel submitted under cover of TSTT's letter dated January 31, 2006, and the Confidential Bundle;
- (b) Mr. Singh's Report on the Physical Audit dated September 18, 2007 and the Agreed List attached thereto should also be supplied to the selected professional;
- (c) Careful note should be made by that professional of the notations made by Mr. Singh on the Agreed List as to the lower quantities used for Digicel specifically (see pages 1 and 3) to determine how such reductions would affect the prices of the relevant items;
- (d) The professional should also express an opinion, if possible, on the issue of when TSTT ought reasonably to have refunded Digicel the amount of US\$120,361.33. From the documents which I have seen in the Confidential Bundle, it is not clear when the reconciliation exercise between Nortel and TSTT took place and that date will affect the calculation of interest payable to Digicel by TSTT on that amount.
- (e) A report from that competent professional should be submitted for my further consideration on or before April 30, 2008 and, upon receipt thereof, I will give my final decision on the amount to be refunded to

Digicel, if any, the interest payable to Digicel on the amount refunded and the costs of these proceedings.

Dated the 14th day of March 2008


.....
André des Vignes
Arbitrator

APPENDIX I

POST AUDIT REPORT

Background

Pursuant to the Ruling of the Arbitrator dated August 27, 2007 in the Dispute referred to at caption, a physical audit was conducted of equipment purchased by TSTT for interconnection with Digicel in the presence of technical expert appointed by the Telecommunications Authority of Trinidad and Tobago.

In accordance with the terms of the Ruling, the technical expert submitted a report dated September 18, 2007 for the attention of the arbitrator and of the parties. By submission dated September 25, 2007, Digicel made several technical arguments, which, in accordance with the terms of the Ruling, must be addressed by the technical expert.

The Arbitrator has specified that the main issue which the technical expert must now address is whether the equipment in the Agreed List attached to the report of the technical expert dated September 18, 2007 is required for the purpose of interconnection with Digicel. Therefore, this Report will outline, by way of explanation to the Arbitrator, the utility of the following items of equipment:

- i.BBSTP and Gateway Controller
- ii.OM 3500
- iii.Communication Server 2000 (CS2K)
- iv.Passport PVG
- v.Installation Related Materials

An integral part of this Report is the figure hereto attached as the Appendix, which gives a diagrammatic representation of the relationship between each piece of equipment referred to in the Report.

The Different Networks

TSTT's mobile telecommunications system is supported by the Next Generation Network (NGN). On the other hand, Digicel's system consists of a Time Division Multiplex (TDM) network.

An NGN is a packet-based network designed to provide telecommunication services with the capacity to make use of:

- ❖ multiple broadband with the capacity to accommodate not only voice but also data and video traffic; and
- ❖ transport technologies that enable Quality-of-Service (QoS) options; and
- ❖ the ability to provide service-related functions independently from underlying transport-related technologies; and
- ❖ the ability to provide to users unfettered access to networks and to competing service providers and/or services of their choice; and
- ❖ generalized mobility which facilitates the consistent and ubiquitous provision of services to users.

Whilst the TDM network is a more established and recognized technology in the industry and because of in-built checks and balances, is generally considered to be more reliable from the network operator's perspective, such network is not designed to readily provide or to facilitate the features outlined above. Numerous providers are resorting to the NGN network because of the ability to connect to networks by different Protocols and because of its perceived cost advantages.

Any equipment that may be required for the purpose of interconnection between Digicel and TSTT must have the capability of linking the two different networks.

In this case, TSTT purchased certain items of equipment for the purpose of interconnection with Digicel. The existence of this equipment was verified in the audit referred to above, the specific items of which are outlined in the Report of this technical

expert dated September 18, 2007 and in the Agreed List contained therein as the Schedule. The importance and relevance of each major item of equipment contained the in the Agreed List (and not their component parts) will be discussed below. It is assumed, for the purposes of this report, that the component parts of each piece of equipment as stated in the Agreed List are needed for the equipment to function optimally.

The BBSTP and the Gateway Controller (GWC)

The BBSTP is that part of the network that performs the signaling functions for Digicel's TDM network i.e. to enable the setting up (dialing), tearing down (hanging up), monitoring (enabling of specific facilities e.g. conference calling) and supervisory (billing) elements of telephone usage.

It was verified in the audit that there were two BBSTP's purchased for the purpose of interconnection with Digicel i.e. one is located at Nelson's Exchange and one located at Couva. It is quite usual and indeed, advisable for two BBSTP's to be installed and operational. Both units remain active in the performance of their signaling functions between the networks of the two providers. Therefore, in the event that one unit fails, the other unit automatically undertakes all active signaling functions. This is known as redundancy and ensures the reliability of the network.

The Gateway Controller (GWC) performs those signaling functions on TSTT's NGN network similar to what the BBSTP performs on Digicel's TDM network as described above. The GWC also converts the Internet Protocol (IP) format that is characteristic of the NGN network into a format compatible with the Communication Server 2000 (CS2K) so that the CS2K can perform its functions as outlined below.

To perform this function, the GWC converts between proprietary Peripheral Processing Virtual Machine (PPVM) messages used by the XA-Core and the open standard protocols that media gateways use. This conversion allows media gateways (NGN) appear to the XA-Core like standard TDM call processing, messaging and control peripherals.

Simply put, if the BBSTP and the GWC were not installed, it would be impossible for Digicel's customers to make calls to TSTT's customers and vice versa.

OM 3500

Voice channels facilitate voice interaction between customers of interconnecting providers. The OM 3500 is an item of the media voice equipment that carries the voice channels by digital multiplexing. It can also carry data as is used by BBSTP. This item of equipment also contains fiber cable that interconnects it to another OM3500 installed by the other interconnecting party. Once the connection is made, depending on the type of hardware and software used, the specific number of circuits containing specific numbers of voice channels may be determined as follows:

- ❖ DS1 - 24 voice channels
- ❖ OC3 – 2016 voice channels
- ❖ OC12 – 8064 voice channels

It was observed at the audit that approximately six thousand (6000) voice channels were multiplexed into Digicel's OM3500.

If the OM3500 were not installed, there would be no voice channels through which telephone conversations could be conducted between customers of Digicel and of TSTT. The signaling function would also be lost because the BBSTP'S are connected through the OM3500.

Communication Server 2000 (CS2K)

The CS2K is a switch which, on the receipt of a signal from one network, connects both TDM and NGN networks. This piece of equipment, which consists of the Extended Architecture Core (XA-Core) and the GWC¹, supports the Passport PVG² in the performance of its functions.

¹ See p. 1 ante

The XA-Core represents the front-end of the CS2K and is what one might consider to be the “brain” of the CS2K. It operates using processor elements (PE) to process data and shared memory (SM) to store and retrieve dynamic data. Using the GWC, the XA-Core sends control messages to set up connections between media gateways and provides maintenance, call processing and billing functionality.

Passport 15000 PVG (PP-PVG)

The PP-PVG provides gateway services between the TDM voice environment and the IP (NGN) data environment i.e. it converts TDM signals to IP (NGN) and vice versa.

The PVG works in conjunction with the CS2K and the GWC forming a logical Succession Node. Communication between the two devices is carried over a control path, which instructs the PVG on the handling of bearer traffic (voice call) connections. All bearer traffic switching media and voice services are handled by the PVG.

Installation Related Materials (IRM) for OM3500 and CS2K

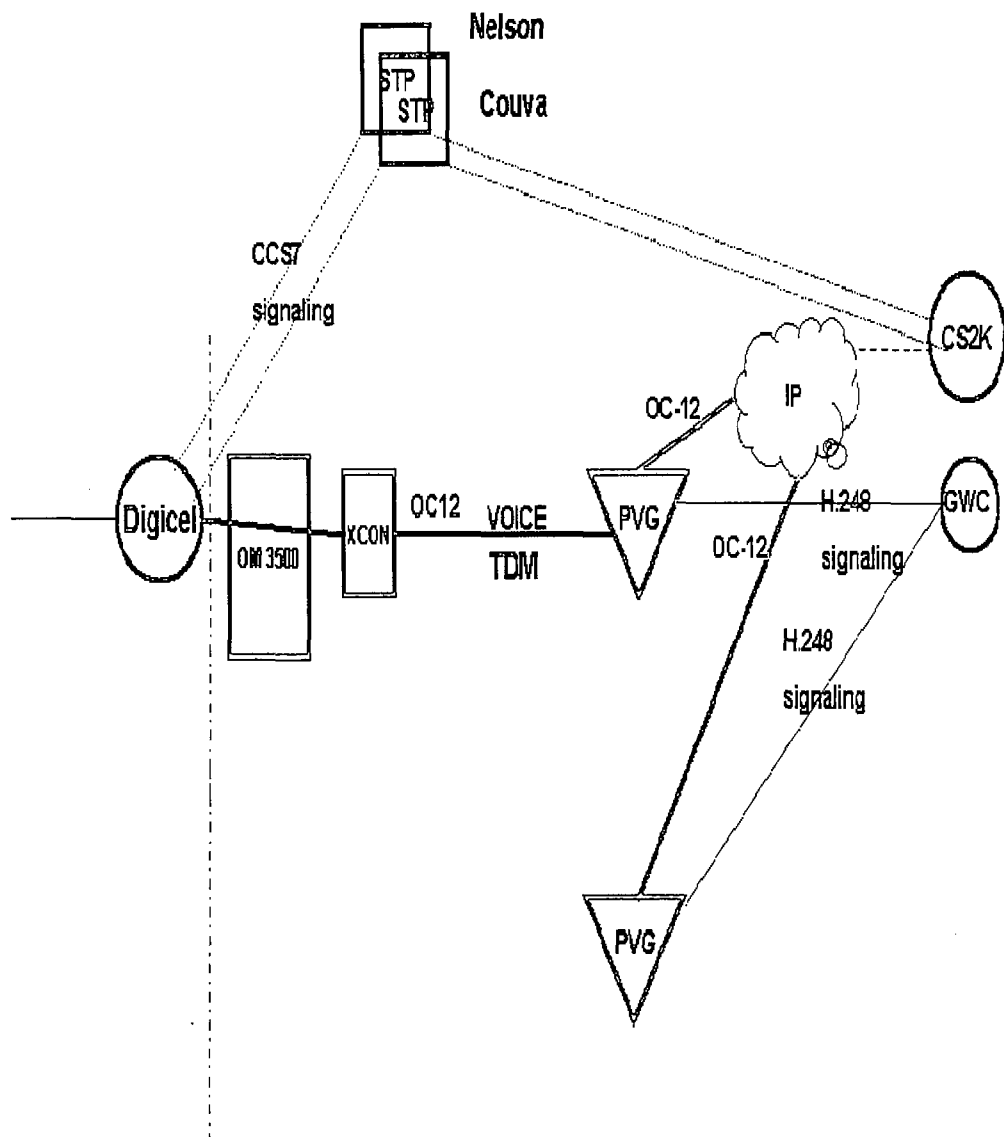
All IRM e.g. cables, racks and anchors must be extremely durable to ensure that all the equipment outlined in the Agreed List are adequately bolstered in the appropriate position.

Telecommunications infrastructure must be reliable and must have the ability to withstand the debilitating effects of natural and other disasters. The IRM manufactured by Nortel are known to be durable and most probably would have withstood many extreme vibratory effects to the physical environment.

Therefore, IRM are just as critical as all the other items of equipment outlined herein for the purpose of interconnection with Digicel.

² See p. post

CS2K PVG CONFIGURATION



Nelson		Tot. Qty.
	BBSTP	
	Link Engine Type 4	NTST10CA 1
	T1-E1 Translt Mod for LE4	NTST81BA 1
	PACK DES STRIP (THERMAL)	P0800766 1
	T1 CABLE T1/E1	NTST91AA 2
	GWC S/W RTU	
	PVG DS0 Trunks (C&)	CS2B0002 8064
	CS2K (Shared with LaqTel & Could not be Split)	
	FILLER PANEL, BIP	A0882318 2
	NSS,MCPN905,1GHZ 512MB RAM	NTRX51DL 7
	SC PWRPC 366MHZ 128M IP	NTRX51FH 4
	SAM21 CHASSIS EXPANSION KT	NTRX51FV 2
	EXPANSION CALL CONTROL FRM	NTRX51HA 1
	BREAKER (3X30A, 2X15A) PCP	NTRX51HF 2
	CABLE ASSEMBLY	NTRX5131 1
	DUAL SAM POWER CABLE ASSEM	NTRX5163 2
	AS B0260912 SAM21 GND CABL	NTRX5166 1
	SAM21 GROUND CABL ASSEMBLY	NTRX5167 1
	JUMPER, BIP, SHELF ALARM	NTRX5195 3
	SHELF ALARM CABLE ASSEMBLY	NTRX5294 1
	INSTALLATION KIT 1 FRM EXT	NTY607BA 1
	LBL NTRX51HA BIP 00, 3 SAM	N0010194 1
	21" BAFFLE	N0016596 1
	REGLATRY LBL SAMF NTRX51HA	N0028920 1
	BAFFLE FILLER PANEL	P0605549 2
	CB DES STRIP SPDC(THERMAL	P0603015 2
	BIP TIMING CABLE	NT0X96NR 2
	CABLE ASSY	NT0X96RP 1
	BIP AISLE ALARM CABLE	NT0X96NQ 1
	CABLE ASSY	NT0X96RJ 1
	SHIELDED 1000BASE-T CABLE	NTRX5209 15
	T1 CABLE T1/E1 TM	NTST91AA 8
	IRM for CS2K (Hardware Cables & Miscellaneous)(Shared with LaqTel & Could not be Split)	
	ANCHOR PAIR M12*65 120MM	A0502620 6
	ANCHOR STACKUP KT PTE2K FR	NTRU0301 6
	END PANEL KIT	NTRU0142 2
	SIDE PANEL KIT	NTRU0128 1
	AUX FRAMING (12' LG) GRAY	A0343041 12
	AUX FRAMING (20' LG) GRAY	A0343045 4
	ROD TO CEIL W/ANCHOR UNIST	B0224637 4
	HANGER ROD TO UNISTRUT	B0241103 20
	FINISHING END CLIPS	B0091447 50
	FINISHING END CLIP LESS 6"	B0254232 10
	END CAP, AUX 2X9/16" BLACK	B0091448 10
	SPLICING AUX FRAM - GRAY	B0239605 10
	LOCK WASHER	P0423638 20

Note: 4 Used for Digicel Specifically

Note: 4 used for Digicel Specifically

SING LVL SUP TO CEIL INSER	B0091457	20
SINGLE LEVEL SUPPORT T	B0224196	6
AUX FRAMEWORK	B0091461	12
BRAC ANGLE SINGLE W/SLT FT	B0258344	20
5/8-11X78 THREADED ROD	P0407733	30
BRACE ANGLE (5'-0" LONG)	P0739425	10
CABLE RACK (5" GRAY LAD)	A0355511	3
CABLE RACK (12" GRAY L.)	A0355510	8
12" CA RK END BAR GRAY	P0720772	3
CBL RK SUP E CAP 2"STRINGR	B0107531	10
CABLE RACK GRAY 3.75"	P0724514	4
CABLE RACK GRAY 10.75"	P0724516	12
CBL RETAIN BARS 7" PILE, E	B0180563	100
CABLE RETAIN BARS BLACK	B0180564	200
BRACKET GREY	A0300107	10
CBL BRACKET (6' DROP) GRAY	P0730855	6
3/8-16X7/8 GRADE 5 BOLT	P0719818	6
CBL RACK CLAMP 2" STRINGER	B0091613	10
CBL RK SUP CORNER CLAMP 2"	B0091615	20
JUNCTION CLAMP CORNER RIGH	B0258353	6
JUNCTION CLAMP CORNER LEFT	B0258354	6
JUNCTION, END TO END ADJUS	B0258355	4
CABLE RACK "T" GRAY	B0239881	4
CA RK SUP PLAIN J BOLT ASY	B0091627	12
CABLE RACK SUPPORT CLIP	B0091629	36
CA RK FAB & SUPPORT	B0091630	4
5" CA RK SUPPORT GRAY	B0239869	6
PROT. TUBING (3'-0" LG)	P0401296	10
CABLE GUARD	P0663893	4
FORMEX 5"W X 25'L BLACK	A0876552	1
#9 WAXED POLYESTER CORD	R0112611	1
CABLE RACK STRINGER TO ICB	B0238925	3
4"HORIZ.STRAIGHT 6' SECT.	R0115467	3
4"COVER KIT FOR HORIZ.SECT	R0115471	3
COVER SUPPORT CLIP KIT	A0618390	2
HINGE FOR 4" & 6" COVERS	A0620773	2
END COVER (4" X 4")	A0380736	2
4X4 SNAP-FIT JUNCT, YELLOW	A0520535	12
4" JUNCTION KIT	A0380759	4
FGS-MKEX-2-10F DUAL EXIT	A0780045	2
2" LADDER RACK SUPPORT KIT	A0383045	10
LADDER RACK BRACKET KIT	A0380769	12
LADDER RACK BRACKET KIT	A0380769	12
NEW THRDD ROD BRKT. KIT	A0380767	4
FIBR CBL ONLY WARNING LABL	P0735863	6
NO. 0 WIRE 1 STR CAB - ISG	R0118730	10
CONN 1/0 AWG 3/8BOLT 2HOL	A0297944	4
CAP SCREW ASSEMBLY	B0093697	10
BASE CABLE TIE MOUNTING	P0633746	20
COMPRESSION TAP	A0361880	2
ADHESIVE COVER	A0378853	2
6 WIRE 1 STR CABLE FT4	R0112715	10
BONDING HRD 7FT 6AWG 3/8BT	B0229482	2

BONDING HRD 7FT RULE 6AWG	B0229483	2
6 GA STRD SGL GRN WIRE FT4	R0113513	1
JUNCTION, SIDE MOUNT ADJUS	B0258358	4
STEP LADDER	B0117444	2
PORTABLE LADDERS & ACCESS.	B0117446	1
00 AWG FT4 PWR WIRE	R0118752	1
4" 90 DEG. HORIZ. ELBOW	A0380728	1
COVR.FOR 4" 90 DEGREE	A0381948	1
4" HORIZONTAL "T"	A0380864	2
COVR.FOR 4" HORIZ. "T" BOW	A0381950	2
COMPRESSION TERMINAL RING	A0320864	2
#2/0 AWG COMP LUG 1/2" H	A0354645	2
LUG 1/0 AWG FLX 1-HLE 1/4"	N0029647	7
1/0AWG CON COMPRESSION	A0614369	7
NO. 0 FLEX POWER	R0119888	152
Passport PVG (Shared with LaqTel & Could not be Split)		
VT100/LAPTOP-CRAFTPORT CBL	A0718806	1
FP/CP FILLER MODULES	NTHR64CA	28
VSP3 OPTICAL FUNCTION PROC	NTHW77AA	10
PP15000 NMS SW TAX S/W CD	NTJ100GA	2
SPCR 6.1 SW CDROM PVG SN08	NTJ240FB	2
PP15K UNIV DSHF CP3/DS1BIT	NTQS20DC	1
CABL ASY FRAME GROUND PT2K	NTRX5140	1
FP,4 PORT OC12,SM,IR,CPAC2	A0888568	4
7.1 MSS 15K FOR MG15K/7K	NTJ099NL	1
OM3500	PEC Code	Qty
Main Eqpt. (Digicel Only)		
Optical Metro 3500 Universal Shelf Assembly (Hardened)	NTN476AH	1
OM3500 Breaker Interface Panel	NTN458RA	1
OM3500 BIP Power Cable Kit Power cable Rel 9.01 and higher	NTN458ZD	1
Optical Metro 3500 Rel. 13.01 Extended Shelf Processor Kit - Hardened	NTN483PB	1
OM3500 Rel. 13.01 NPx Network Processor Kit - (Hardened)	NTN484PB	1
VTX 48e Cross Connect (Hardened)	NTN414AH	2
OC-12 LR Optical Circuit Pack (STS-12C) (Connectorless)	NTN404JA	2
DS1/VT Mapper (Hardened)	NTN430AA	2
OC-3 X 4 IR Interface (Hardened) (No Connectors)	NTN441AA	2
DS1 I-28 Enhanced Front I/O Module (Hardened)	NTN452AH	1
Protection Switch Controller (PSC)	NTN412AA	1
Optical Metro 3500 Rel 13.01 CD	SN462PBB7A	1
Site Manager 7.2 Application Kit	NTNM14GC	1
Site Manager 7.2 OM3000 RTU	NTNM79GJ	1
Optical Network Management Base RTU -Small NE	NTNM70ES	1
Inventory Management - Small NE	NTNM67MAS	1
OM 3500 OC3/OC12/OC48 UPSR Application RTU (per NE)	NTN461GA	1
OM3500 Rel. 13.01 Software Certificate (per NE)	NTN461PB	1
DS1/VT Mapper (from JCO)	NTN430AA	1
Optical Only Spares (Digicel Only)		
OM3500 LIF Left interface circuit pack Hardened	NTN451BH	1

(Note: 6 used specifically for Digicel)

OM3500: 20A Power Module	NTN451HA	1
OM3500 LOAM left OAM circuit pack Hardened	NTN451MH	1
OM 3500 Fan Module- Hardened (For NTN458QH cooling unit a	NTN458HH	1
OM 3500 Air Filter	NTN458KE	1
Optical Metro 3500 Rel. 13.01 Extended Shelf Processor Kit - Hardened	NTN483PB	1
OM3500 Rel. 13.01 NPx Network Processor Kit - (Hardened)	NTN484PB	1
VTX 48e Cross Connect (Hardened)	NTN414AH	1
DS1/VT Mapper (Hardened)	NTN430AA	1
OC-3 X 4 IR Interface (Hardened)	NTN441AA	1
Installation Related Materials for OM3500 (Shared with LagTel & Could not be Split)		
Anti-static Wrist Strap	A0336175	1
SC Optical Connector Kit (includes 2 connectors)	NTN459SC	6
Optical Patchcord, LC-SC, SM, Simplex 5 meter	NTTC50BD	16
Optical Patchcord, LC-SC, SM, Simplex 10 meter	NTTC50BF	16
DS1 Right Angle Cable Kit, 100 ft. (1200")	NTN458MR	1
FPC, SC-SC, 20m, 2.0mm, 1F, SM, Riser,	A0812907	12
5dB, FC Ultra PC, Plug Type Attenuator [JDS part FA100-35-05]	A0733583	2
Attenuator - Fixed Pad 5.0 dB (LC Connector)	A0516703	6
5dB, SC Ultra PC, Plug Type Attenuator	A0642716	12
22AWG 2-Pair CU, FRPE, Lt Grey PVC, each pair shld, 100 Ohm	R0116107	20
24 AWG 6-Pair CU, Lt Gry PVC, SR-PVC (Meter)	R0061281	30
Zone 4 Anchor Bolts Kit (order one per NTRU0411 frame)	NT7E74AA	3
Frame insulation kit (order one per NT7E70 frame installed in an	NT7E6020	1
Support, Plain "J" bolt, 2" stringer, ED1242-71 G37A	B0091627	6
Support, Spanner "J" bolt, 2" stringer, ED1242-71 G37B	B0091628	4
Rod, Thread .625-11 x 6.00"	P0637060	6
Nut, Hex .625-11 x 1.062 x .60	P0205261	12
Washer, .688 x 1.75 x .14	P0160834	12
Aux Framing Channel, 4', Gray	A0343038	6
2" Vertical Slotted Duct Kit, 6 foot Length, Orange, FGSO-KTW1	A0839644	2
Express Exit (use on 4- & 6-Inch Systems), FGS-MKEX-2-10F	A0780045	3
Lug, 6 AWG, 2 H, #10 bolt, 5/8" c-c, Blue, Short Barrel, YA6CL-2	A0675400	4
Lug, 2 AWG Flex, 2 H, #10 Bolt, 5/8" c-c, YAV2CL-2NT10-FX	A0512670	5
Lug, 2 AWG, 1/4" (use only with Cobra Cable power cables), YA	A0830553	5
Lug, 2 AWG Flex, 2 H, 3/8" Bolt, 1" c-c, YAV2CL-2TC38-FX	A0538673	5
Lug, 2 AWG Flex, 2 H, 3/8" Bolt, 1" c-c, YA1C-2TC38, NO WIND	A0668309	5
Lug, Ring, 16-14 AWG, #10 bolt	A0288182	8
PWR WIRE 14AWG BLK(Meter)	R0113364	2
PWR WIRE 14AWG RED(Meter)	R0118771	2
PWR WIRE 6AWG GRN(Meter)	R0113513	6
PWR WIRE, 2AWG Flex, Black (Meter)	R0120638	15
Lug, 1/0, 2 Hole, 3/8" bolt, 1" c-c, Pink, Short Barrel, T&B 54209	A0297944	3
PWR WIRE 0AWG BLK (Meter)	R0118730	40
Insulator ("Cherry"), Fits 5/8"-11 Threaded Rod, Length: 2.75", C	A0353389	6
Cap screw assy., 1/4" copper bolt, nut, washers 1" grip	B0093685	6
Cap Screw Assy, 1/4" bolt, 3/8" grip, 3/4" long, ED2227-30.001	B0093681	6
Cap Screw Assy, 3/8" bolt, 3/8" grip, 1" long, ED2227-30.020	B0093696	6
Cap Screw Assy, 3/8" bolt, 1/2 to 5/8" grip, 1-1/4" long, ED2227-	B0093697	6
C-Tap, 1 to 1, 1/0 to 1/0-2, 2/0 to 2/0-4, 3/0 to 1/0-6, 4/0 to 1-8, "	A0378829	10
C-Tap, 1AWG to 5-10, 2 to 4-5, 3 to 3-4, T&B 54735	A0360772	4
C-Tap, 1/0 main, 4-12AWG branch, 1 to 3-4, 2 to 2-3, T&B 5474	A0361880	4

C-Tap Adhesive Cover, T&B AC5X7	A0378853	10
TPN fuse, 50 Amp, TPN-50	A0380114	3
Fuse, Alarm 1/4A 48V NE-70F	A0027542	2
Installer Consumable Kit	NTJE01AC	1
Rack, Cable Ladder, 5" Wide, grey	A0355511	6
T-Intersection, Vertical to Horizontal, Gray, ED1242-71 G345A	B0239881	2
T-Intersection, Vertical to Horizontal, ED1242-71 G45B	B0091640	2
Support for Cbl Rk at Cable Hole, Grey, ED1242-71G370	B0239884	2
Junction Clamp, 2" stringer, ED1242-71 G30A	B0091613	4
Anchor, Drop-In 1/2", 2" Long, 0.5"-13, Use to attach cbl rk brkts	P040B416	6
Flexible Tubing with Slit, 7/8", 15 foot length, FGS-MFTY-15F	A0704355	4
FPC,SC-SC,20m,2.0mm,1F,SM,Riser,	A0812907	24
FPC,FC-FC,2m,2.9mm,1F,SM,Riser,	A0704456	16
11' 6" x 19" Frame (Newton-grey)	0040970531	1
Ground Bar (Newton)	0043400013	1
Junction Kit (Newton-grey)	0041030031	1
19 in Rear Guard Rail (Newton) 0041060331	0041060331	1
FPC,SC-SC,5m,2.0mm,1F,SM,Riser,	A0823731	8
FPC,SC-SC,7m,2.0mm,1F,SM,Riser,	A0834165	8
FPC,SC-SC,10m,2.0mm,1F,SM,Riser,	A0814679	8
Rack, Cable Ladder, 12" Wide, grey	A0355510	20
Rack End Detail, Ladder-Type, 12" Wide, Grey	P0720772	4
End Cap, Ladder-Type, 2" Stringer, Black	B0107531	6
Intersection Corner Bracket, Grey, ED1242-71G329	B0239872	4
Junction Clamp, 90 Deg. Edge, 12" Wide, Grey, ED1242-71G33	B0239876	4
T-Intersection, Vertical to Horizontal, Gray, ED1242-71 G345A	B0239881	4
T-Intersection, Vertical to Horizontal, ED1242-71 G45B	B0091640	4
T-Intersection, Horizontal Intersection, ED1242-71 G348A	B0239850	4
Cable Rack Support, Vertical, Grey, ED1242-71G343	B0239880	4
Cable Rack Securing Hardware, Gray, ED1242-71 G369	B0239883	2
Wall Bracket, For 12" Wide ca rack, Grey	A0385000	4
Support for Cbl Rk at Cable Hole, Grey, ED1242-71G370	B0239884	2
Panning, 6' Long, Grey Plastic, 12" Wide	P0724516	36
Cable Retaining Bars, 7" Pile-Up, 2" Stringer, ED1242-71 G23C	B0180563	100
Junction Clamp, 2" stringer, ED1242-71 G30A	B0091613	4
Junction Clamp, Edge, ED1242-71 G33	B0091617	12
Support, Plain "J" bolt, 2" stringer, ED1242-71 G37A	B0091627	50
Support, Spanner "J" bolt, 2" stringer, ED1242-71 G37B	B0091628	10
Clip, .125 STL Iss 5	P0420919	100
Rod, Thread .625-11 x 18.00"	P0400664	30
Rod, Threaded .625-11 x 78.00	P0407733	30
Bolt, Carriage .500"-13 x 3.0" Long	P042A066	20
Bolt, Carriage .500"-13 x 4.5" Long	P030A014	20
Nut, Hex .625-11 x 1.062 x .60	P0205261	100
Washer, .688 x 1.75 x .14	P0160834	40
Aux Framing Channel, 4', Gray	A0343038	20
Support Aux Framing to Ceiling Insert, ED1241-73 G21	B0091457	20
Support Aux Framing to Wall, ED1241-73 G22A	B0091459	4
Support Aux Framing to Threaded Rod, ED1241-73 G21B	B0224196	20
Bracing, Double Rod, Aux Framing, Plated, ED1241-73 G35A	B0091477	12
Anchor, 5/8"	P0649114	50
Toggle Bolt Anchor Kit 3/8", H555-120G23	B0241467	10
Tee Horizontal, FGS-MHRT-A	A0380864	1

Couva