



**British Columbia Transmission
CORPORATION™**

**Potential Northwest Transmission Line Project
Preliminary Facility Ratings and
System Data**

**Report No: SPA2007-66
July 2007**

System Planning & Performance Assessment

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Potential Northwest Transmission Line Project
Preliminary Facility Ratings and System Data

BC Transmission Corporation is studying options for potentially expanding the existing electricity system in northwest B.C. Currently, the most north-western part of the transmission system consists of a 138 kV transmission line to Meziadin Junction, which then runs west to power Stewart, B.C.

BCTC is now focusing its studies on a potential 335 km, 287 kV new transmission line that would run from Skeena Substation (located near Terrace) to a new substation near Bob Quinn Lake – the Northwest Transmission Line (NTL). At this time, a decision on whether to proceed with an NTL has not been made.

This document provides facility ratings and system data with respect to a potential Point of Delivery as indicated below.

1. Point of Delivery

Bob Quinn Substation 138 kV bus. Bob Quinn Substation will be approximately 123 km north of Meziadin Substation.

2. Supply Voltage

Supply voltage at the Point of Delivery: 138,000 volts, +/- 10%

3. Fault Level

Fault Level at Point of Delivery

	All Facilities in Service	Single Contingency
2009 Stage	242 MVA	182 MVA
2011 Stage	567 MVA	450 MVA
Ultimate	3000 MVA	

Notes: 1. Fault levels assume no local generation.

2. Single contingency fault level based on one Bob Quinn 287/138 kV transformer out of service.

4. 287 kV Transmission Line Data

Conductor: Two bundle 477 MCM ACSR Hawk

Transmission Line Parameters
(p.u. @ nominal operating voltage, 100 MVA)

	R	X	B/2
Skeena to Meziadin Section – 287 kV operation (215 km)	0.0177	0.0968	0.3893
Meziadin to Bob Quinn Section – 138 kV operation (123 km)	0.0437	0.2396	0.0515
Meziadin to Bob Quinn Section – 287 kV operation (123 km)	0.0101	0.0554	0.2227

Summer Rating @ 30 degree ambient:

2009 Stage operated at 138 kV: 1456 Amperes/348 MVA

2011 Stage operated at 287 kV: 1456 Amperes/724 MVA

Note: Actual line capability may be limited by other factors to less than the thermal rating.

5. Bob Quinn Substation One Line Diagram

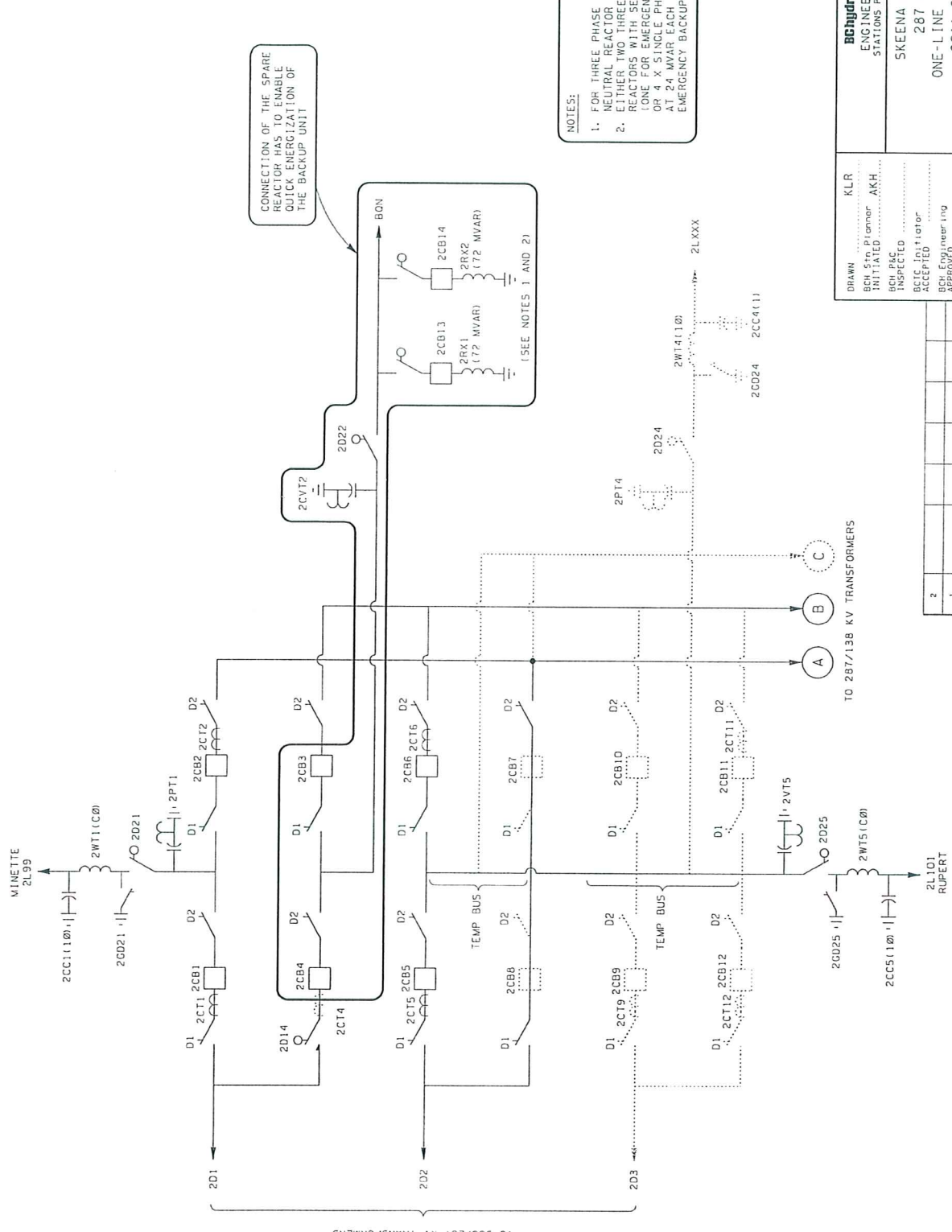
See Appendix 1.

6. Bob Quinn Substation Equipment Ratings

Transformers: 287/138/12.6 kV, 120 MVA, ONAN. Tertiary windings rated at 45 MVA

Synchronous Condensers: +/- 45 MVAR

Appendix 1
Station One Line Diagrams



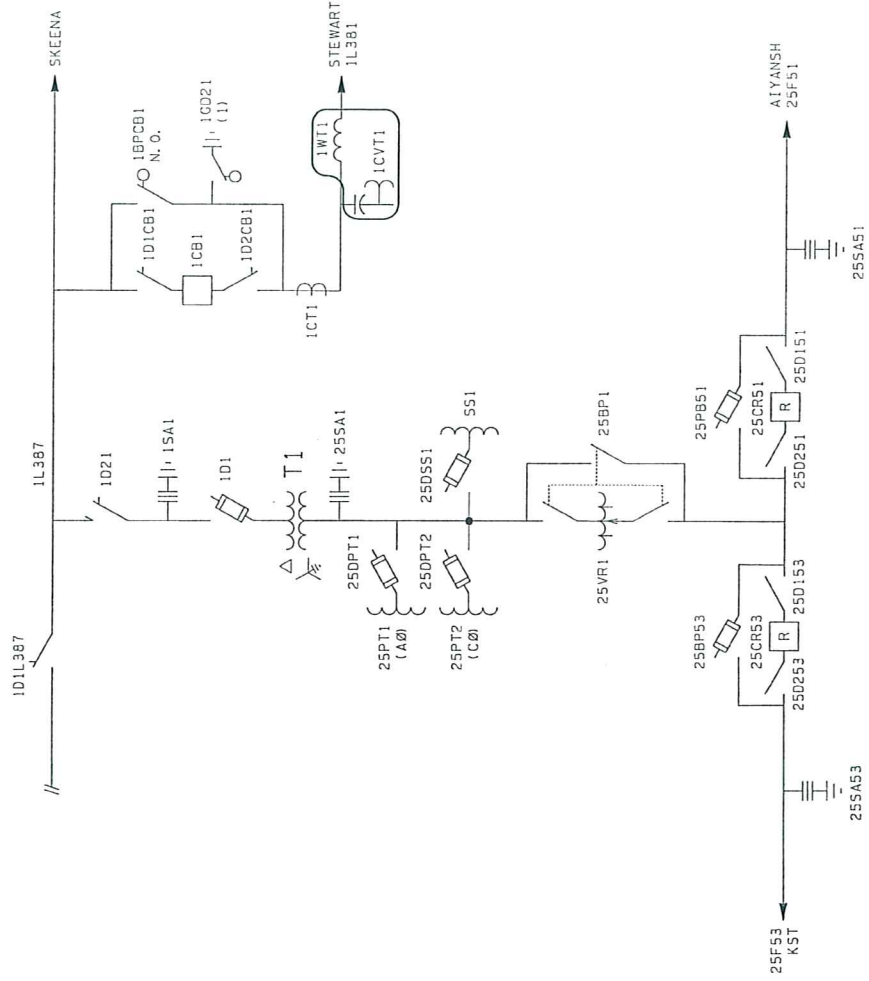
CONNECTION OF THE SPARE REACTOR HAS TO ENABLE QUICK ENERGIZATION OF THE BACKUP UNIT

NOTES:
 1. FOR THREE PHASE REACTOR REQUIRE NEUTRAL REACTOR RATED AT 72 MVA, EITHER TWO THREE PHASE REACTORS WITH SEPARATE CB (ONE FOR EMERGENCY BACK UP) OR 4 X SINGLE PHASE REACTORS AT 24 MVAR EACH (ONE FOR EMERGENCY BACKUP).

TO 500/287 KV TRANSFORMERS

DRAWN	KLR	Bchhydro
BCH STATUS	INITIATED	ENGINEERING STATIONS PLANNING
BCH INSPECTION	INSPECTED	SKEENA (SKA)
BCH ACCEPTANCE	ACCEPTED	287 KV
BCH APPROVAL	APPROVED	ONE-LINE DIAGRAM
DATE	29 MAY 07	2011 STAGE
SHEET	1	DWG NO SKA-PO6-SK1
		R 1

907-PO6-SK1S13

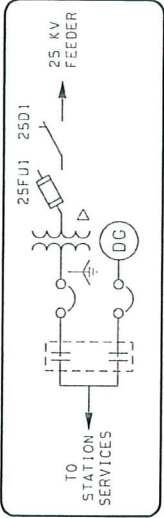
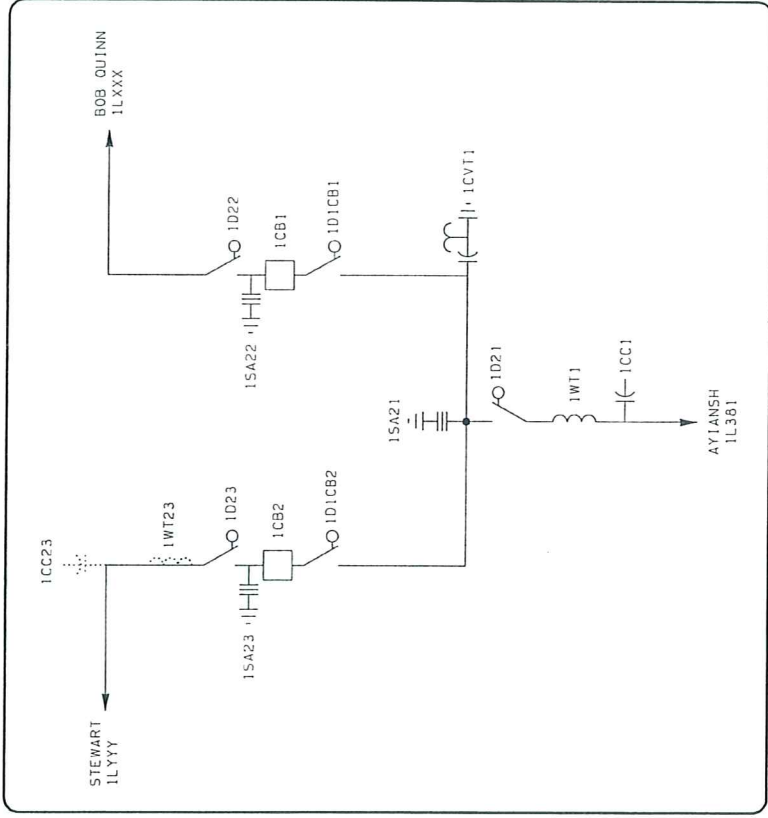


NOTE:
 25CR53 - MGE, TYPE CWVE, 25 KV
 400 A, 150 KV BIL.

ic hydro ENGINEERING STATIONS PLANNING	
AIYANSH (AYH) ONE-LINE DIAGRAM 2009 STAGE	

DRAWN	KLR	BCH	DATE	12 JUN 07	SHEET 1	DWG NO 924-P06-SK1	RO
BCH	INITIATED	AAH					
BCH	INSPECTED						
BCTC	INITIATOR						
BCH	ENGINEER						

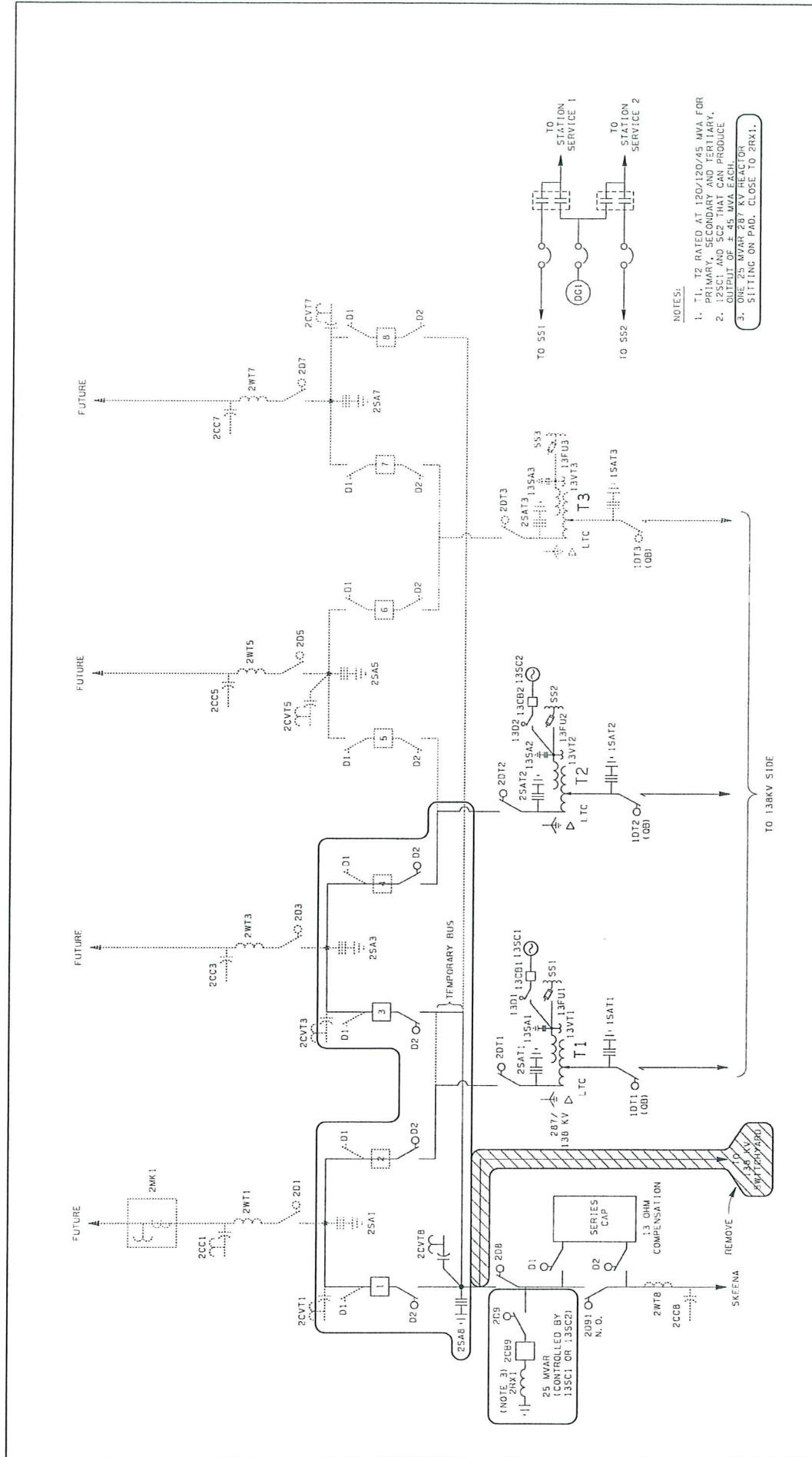
REV	NO	DATE	DWN	BCH	BCTC	BCH	BCH
2							
1							



NOTE:
 1. ONE 138 KV CB SITTING ON PAD FOR SPARE OF BOTH BON AND MEJ.

BCHydro	KLR
ENGINEERING	STATIONS PLANNING
NEW MEZIADIN	138 KV
ONE-LINE DIAGRAM	2009 STAGE
DRAWN	DATE
BCH Str. Planner	27 JUN 07
INITIATED	
AKH	
DESIGNED	
BY	
CHECKED	
BY	
APPROVED	
BY	
DATE	

2										
1										
REV NO.	DATE	DWN	BCH INTL	BCH INSP	BCH ACPT	BCH APPD				

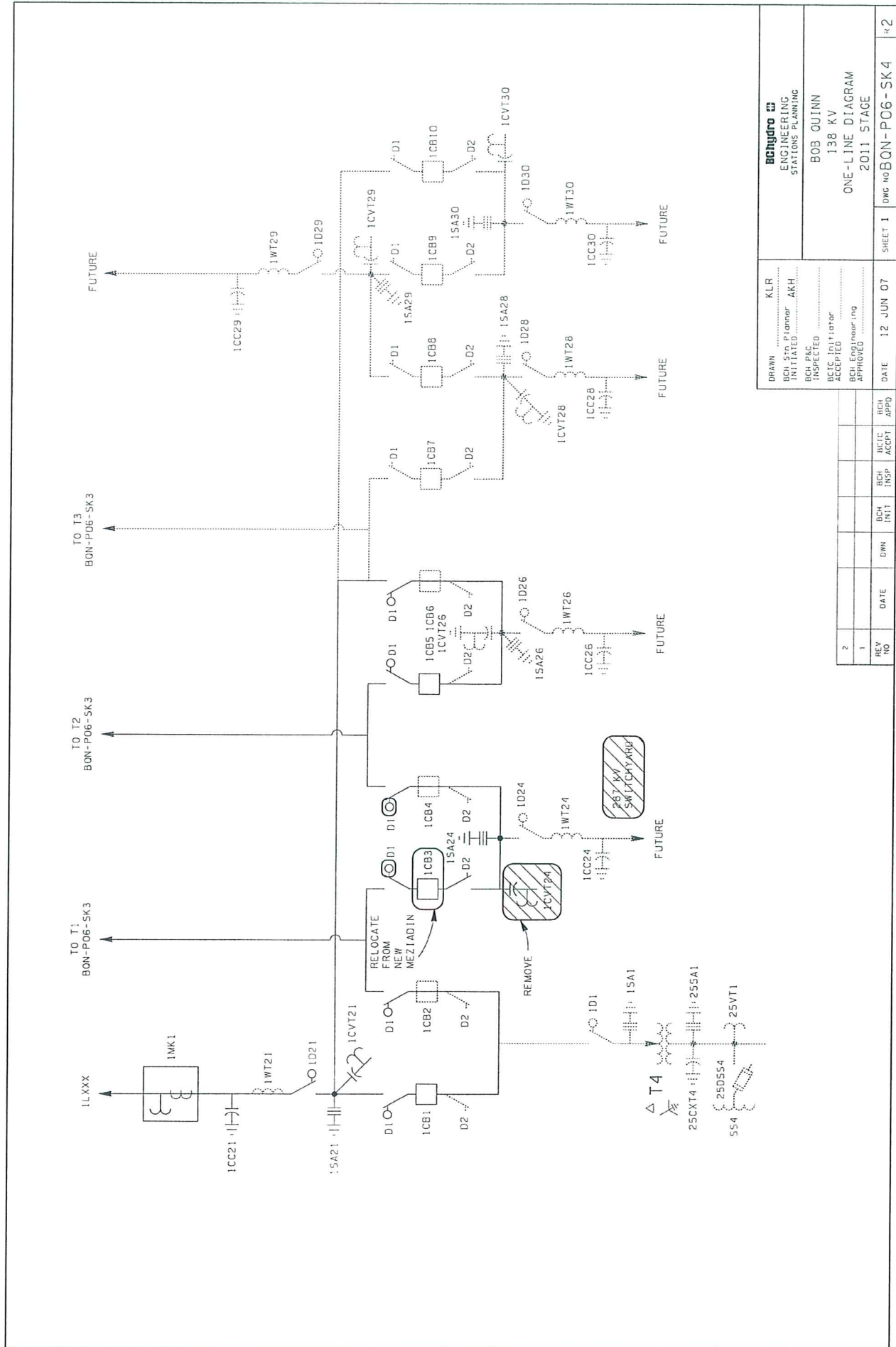


NOTES:

- T1, T2 RATED AT 120/120/45 MVA FOR PRIMARY, SECONDARY AND TERTIARY. AND SCHEMATICALLY PRODUCE OUTPUT ON 25 MVA EACH.
- ONE 25 MVAR 287 KV REACTOR SITTING ON PAD. CLOSE TO 2RX1.

DRAWN	KLR	BCHydro ENGINEERING STATIONS PLANNING
BCH Srn Planner	AKH	
BCH PAK	INSPECTED	BOB QUINN 287 KV ONE-LINE DIAGRAM 2011 STAGE
BCH IC Initiator	ACCEPTED	
BCH Engineering	APPROVED	
DATE	27 JUN 07	SHEET 1
DWG NO	BQN-PO6-SK3	R2

REV NO	DATE	DWN	BCH INIT	BCH INSP	BCH IC ACPT	BCH APPD
2						
1						



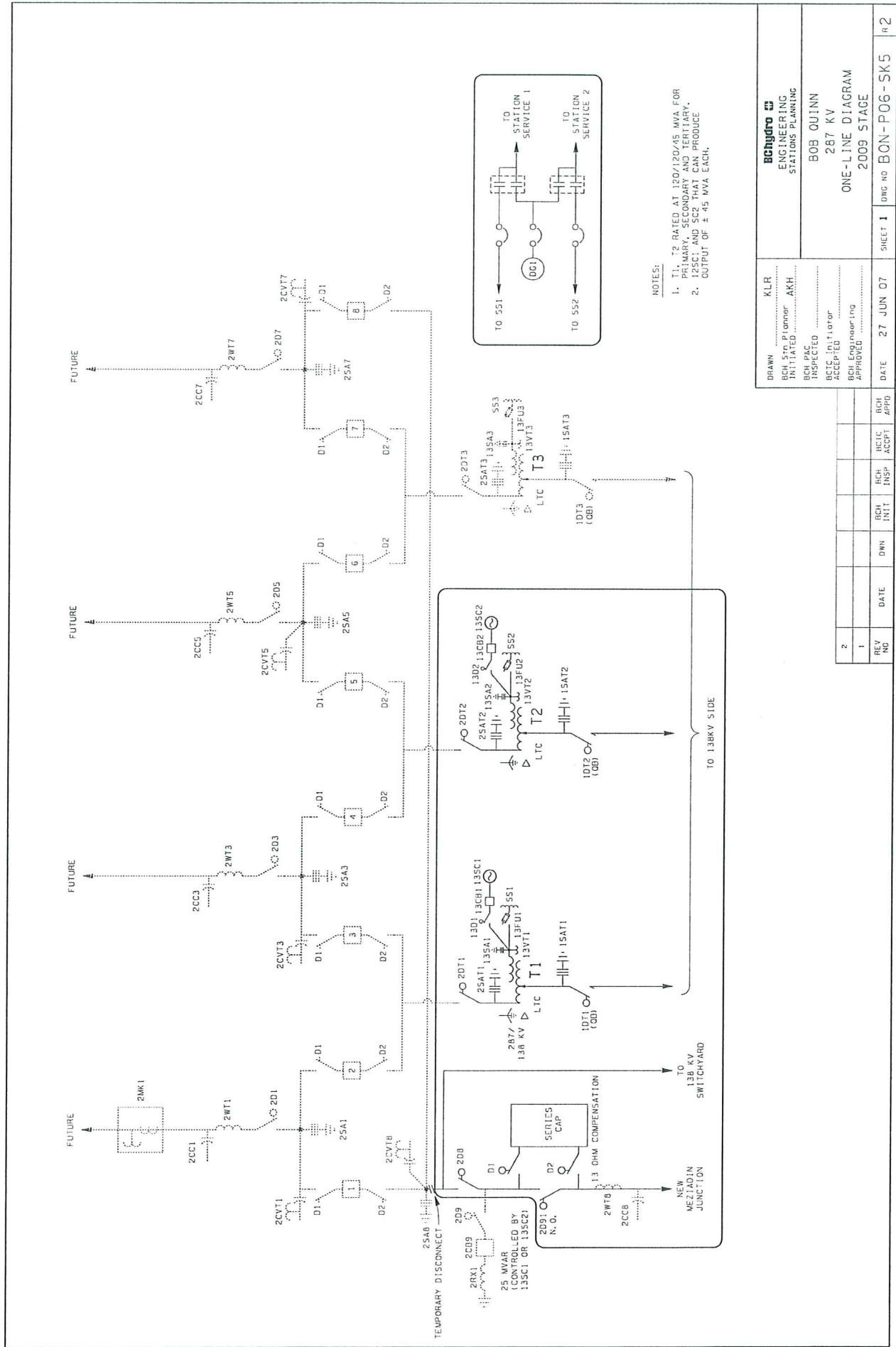
Bchydro
 ENGINEERING
 STATIONS PLANNING

BOB QUINN
 138 KV
 ONE-LINE DIAGRAM
 2011 STAGE

REV NO	DATE	DWN	BCH	INSP	INT	BCH	INSP	ACPT	HCH	APPD
2										
1										

DRWN KLR
 BCH 5th Planner AKH
 INITIATED
 BCH PAC
 INSPECTED
 BCLC Initiator
 ACCEPTED
 BCLC Engineer ing
 APPROVED

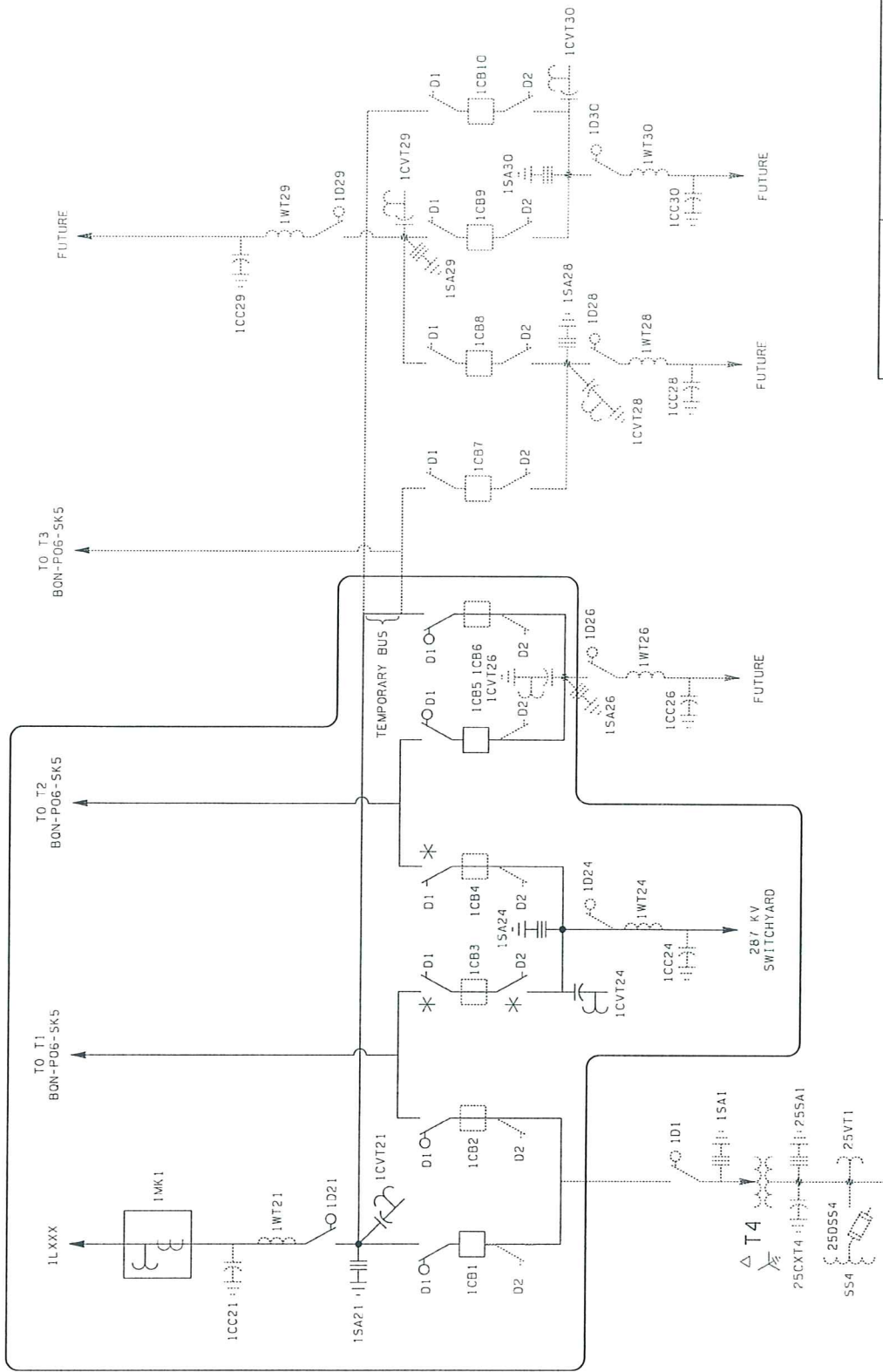
DATE 12 JUN 07 SHEET 1 DWG NO BQN-P06-SK4



NOTES:
 1. T1, T2 RATED AT 120/120/45 MVA FOR
 PRIMARY, SECONDARY AND TERTIARY.
 2. 125C1 AND 5C2 THAT CAN PRODUCE
 OUTPUT OF ± 45 MVA EACH.

REV NO	DATE	DWN	BCH INIT	BCH INSP	BCH ACPT	BCH APPD
1						
2						

DRAWN	KLR
BCH 5 th P1anner	ENGINEERING
INITIATED	STATIONS PLANNING
BCH PAC	AKH
INSPECTED	
BCH 1 st Editor	BOB QUINN
ACCEPTED	287 KV
BCH Engineering	ONE-LINE DIAGRAM
APPROVED	2009 STAGE
DATE	27 JUN 07
SHEET	1
DWG NO	BON-P06-SK5
	R 2



NOTE:
 1. ✖ DISCONNECT INSTALLED AT 2009 STAGE
 TO ALLOW SHORTER OUTAGE PERIOD FOR 2011 STAGE MODIFICATIONS.

bchydro ENGINEERING STATIONS PLANNING	
DRAWN: KLR BCH-Station Planner INITIATED: AKH	BOB QUINN 138 KV ONE-LINE DIAGRAM 2009 STAGE
BCH-P&C INSPECTED: AKH R.C.I.C. Initiator ACCEPTED: AKH BCH-Engineering APPROVED: AKH	DATE: 12 JUN 07 SHEET 1 DWG NO: BON-PO6-SK6

REV NO	DATE	DWN	BCH INIT	BCH INSP	BCH ACPT	BCH APPD
2						
1						