

# BCD Manufacturing Models

## Must Meet the Schedule!

- We'll have chances for corrections and modifications later
- Extremely important to generate first comprehensive cost model on time
  - Make sure we have WBS placeholders for *all* components
  - Complete WBS so Area System Managers can take results cleanly into Area rollups
  - Don't worry about small stuff that is *not* major cost driver

## BCD Manufacturing Models

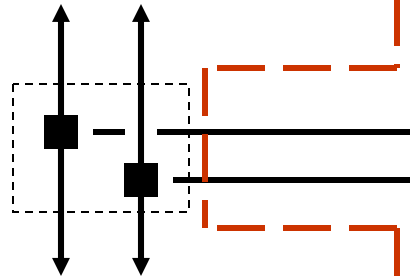
- ➔ • AC Power System
  - Use Corvin proposed commercial solution
- ➔ • Charger
  - Use current FNAL numbers; revise if get better ones before June 22.
- C. Jensen
  - BCD: Modulator Power

## ACD Activities

- Will continue as time permits
  - None are crucial to Vancouver result
  - *Make cost generation your #1 priority until completed*

## BCD COTS CONFIGURATION

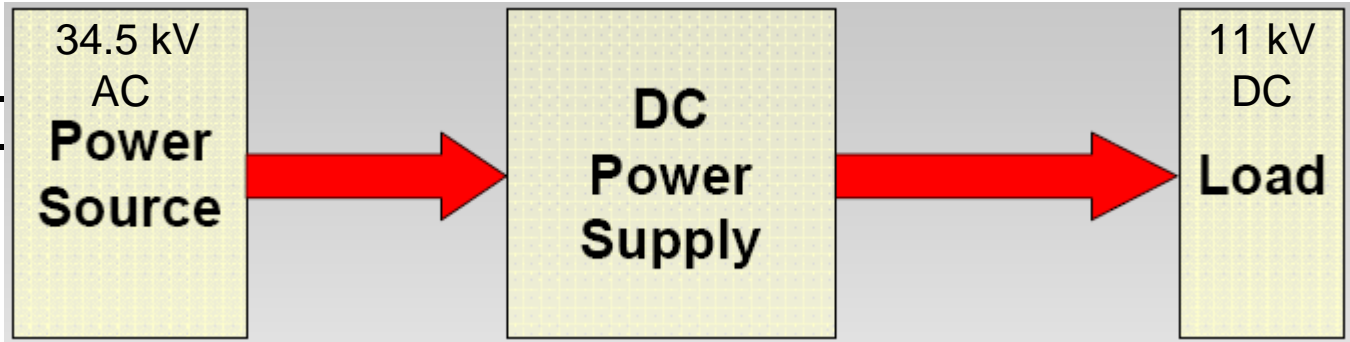
CF&S 34.5 kV COTS  
POWER FEEDERS  
IN RSC ABOVE  
FLOOR Per NEC



COTS ESNA TEE  
CONNECTORS  
IN TOTALLY  
ENCLOSED  
STEEL BOX

BLANKED TEE  
TAPS INITIALLY

CF&S SYSTEMS



■ Cap charging  
- Modulators

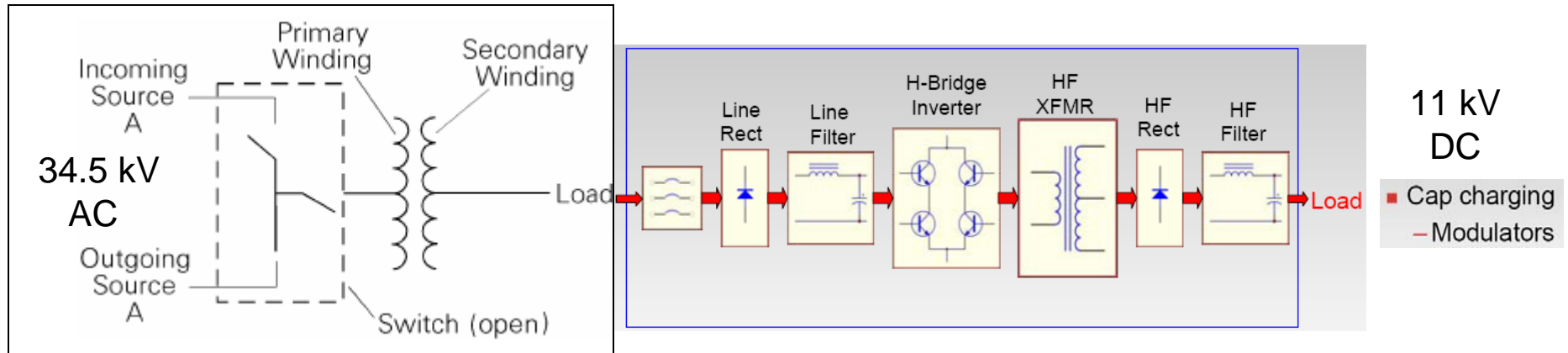
HLRF TECHNICAL SYSTEMS  
ONE Per ~36 Meters



WATER AND AIR HEAT LOAD											
MAIN LINAC - ELECTRON & POSITRON											
Components	Quantity	Location	Total Heat Load (KW)	Heat Load to Water (KW)	To Deionized Water				To Air		Source
					Supply Temp ( C )	Return Temp ( C )	Typical (water) pressure drop Bar	Acceptable Temp Variation delta C	Heat Load to Air (KW)	Max Space Temp ( C )	
<b>RF AC Pwr Transformer 34.5-.48 kV</b>		Service Tunnel	4.00	0.00					4.0		* Clay email 3-14-06 typical 225 kVa oil xfmr
AC Pwr Transformer 34.5-.48 kV		Service Tunnel	2.00	0.00					2		* Clay email 3-14-06 typical 112.5 kVa oil xfr
Emerg. AC Pwr Transformer 34.5-.48 kV		Service Tunnel	1.00	0.00					1.3		* Clay email 3-14-06 typical 75 kVa oil xfmr
<b>DC Charging Supply 0.48KvAC-11KvDC</b>		Service Tunnel	15.00	7.50					7.5		* C.Jensen email 2-27-06 183 kVa 0.84pf oil
Klystron Focusing Coil		Service Tunnel	8.40	8.40	*34>				0		* Shigeki Fukuda Email 4-05-06
Modulator		Service Tunnel	15.00	7.50					7.5		* Shigeki Fukuda Email 3-1-06
Klystron Collector		Service Tunnel	61.00	61.00	*35>		2		0		* Shigeki Fukuda Email 3-1-06
Klystron Body		Service Tunnel	10.00	10.00	*35>		5 +-0.2 deg		0		* Shigeki Fukuda Email 3-1-06
Klystron Windows		Service Tunnel	0.50	0.50	*35>		1		0		* Shigeki Fukuda Email 3-1-06
Relay Racks		Service Tunnel	13.25	0.00	N/A	N/A	N/A		11.26		* Shigeki Fukuda Email 3-30-06
Charging Supply		Service Tunnel	7.50	7.50					0		* Shigeki Fukuda Email 3-1-06
Circulators and Dummy Load		Accelerator Tunne	24.30	24.30	20-40				0	N/A	* Shigeki Fukuda Email 3-1-06
Waveguide		Accelerator Tunne	4.00	4.00	N/A	N/A	N/A		0.00		* Shigeki Fukuda Email 3-30-06
Other components?????		????								N/A	
<b>Total</b>			165.95	130.70					33.56		
MAIN LINAC - ELECTRON & POSITRON											
Updated 25 MAY 2006											
Components	Quantity	Location	Total Heat Load (KW)	Heat Load to Water (KW)	To Deionized Water				To Air		Source
					Supply Temp ( C )	Return Temp ( C )	Typical (water) pressure drop Bar	Acceptable Temp Variation delta C	Heat Load to Air (KW)	Max Space Temp ( C )	
AC Pwr Transformer 34.5-.48 kV	1/144 m	Service Tunnel	2.00	0.00					2		* Clay email 3-14-06 typical 112.5 kVa oil xfr
Emerg. AC Pwr Transformer 34.5-.48 kV		Service Tunnel	1.00	0.00					1.3		* Clay email 3-14-06 typical 75 kVa oil xfmr
<b>RF Charging Supply 34.5 kV AC-11 kV DC</b>	1/36 m	Service Tunnel	19.00	7.50					11.5		* C.Jensen email 5-25-06
Klystron Focusing Coil		Service Tunnel	8.40	8.40	*34>				0		* Shigeki Fukuda Email 4-05-06
Modulator		Service Tunnel	15.00	7.50					7.5		* Shigeki Fukuda Email 3-1-06
Klystron Collector		Service Tunnel	61.00	61.00	*35>		2		0		* Shigeki Fukuda Email 3-1-06
Klystron Body		Service Tunnel	10.00	10.00	*35>		5 +-0.2 deg		0		* Shigeki Fukuda Email 3-1-06
Klystron Windows		Service Tunnel	0.50	0.50	*35>		1		0		* Shigeki Fukuda Email 3-1-06
Relay Racks		Service Tunnel	13.25	0.00	N/A	N/A	N/A		11.26		* Shigeki Fukuda Email 3-30-06
Charging Supply		Service Tunnel	7.50	7.50					0		* Shigeki Fukuda Email 3-1-06
Circulators and Dummy Load		Accelerator Tunne	24.30	24.30	20-40				0	N/A	* Shigeki Fukuda Email 3-1-06
Waveguide		Accelerator Tunne	4.00	4.00	N/A	N/A	N/A		0.00		* Shigeki Fukuda Email 3-30-06
Other components?????		????								N/A	
<b>Total</b>			165.95	130.70					33.56		

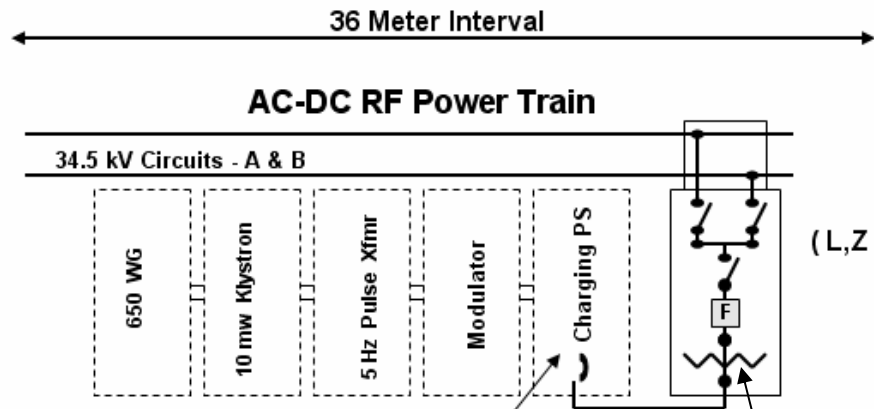
25 MAY 2006

## MOST DIRECT BCD COTS CONFIGURATION POSSIBLE



HLRF TECHNICAL SYSTEMS  
ONE Per ~36 Meters

# MOST DIRECT BCD COTS CONFIGURATION POSSIBLE



**Rack Mounted PS Double Rack**  
0.8W x 1.6L x 2.0H m

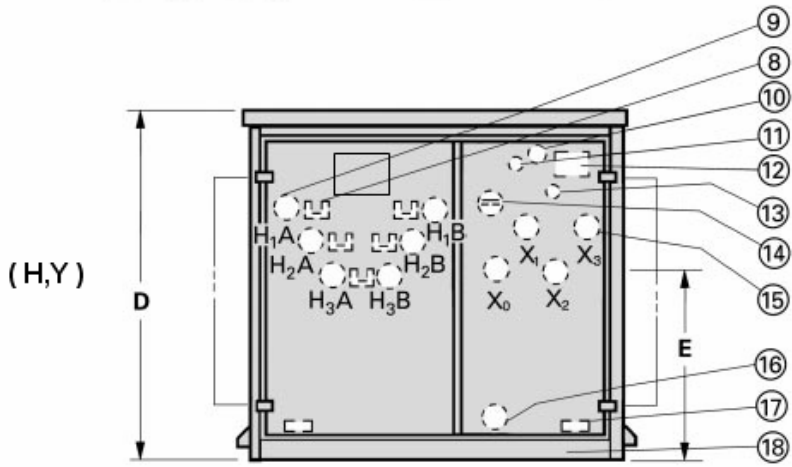
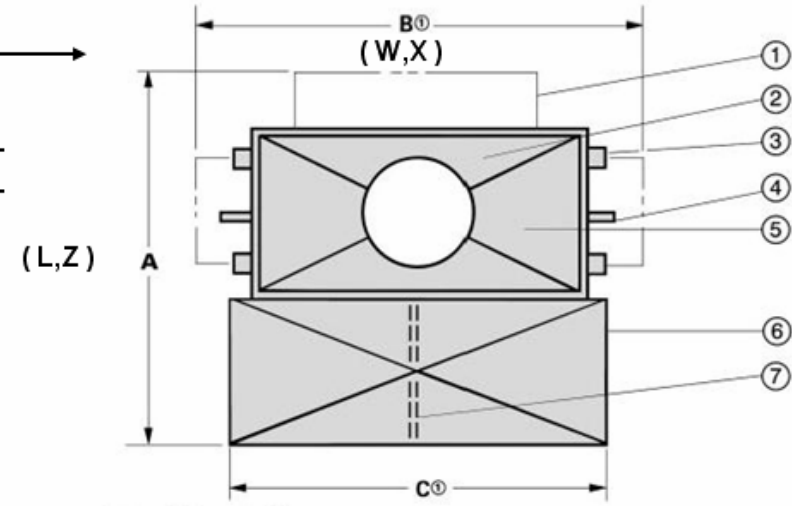
**Power Factor**  
Passive PFC 0.85 min

**Efficiency**  
Better than 85%

<http://www.pppower.co.uk/product58.htm>

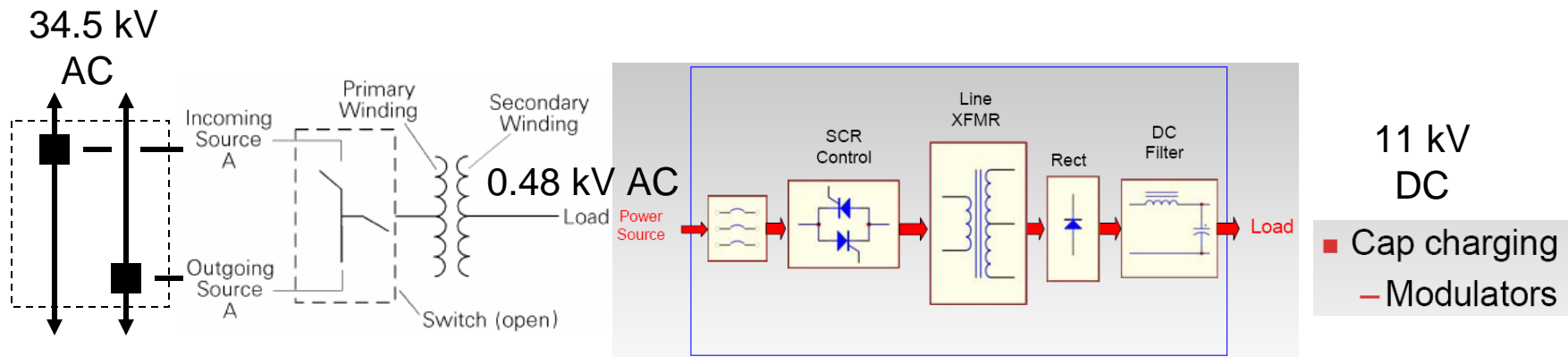
Dimensions in Inches (mm)				
A (L,Z)	B (W,X)	C	D (H,Y)	E
59 (1499)	57 (1448)	53.25 (1353)	49 (1245)	25 (635)
Dimensions in Inches (mm)			Liquid Gal. (Lt)	Approx. Total Wt. With Oil lbs. (kg.)
F	G	H		
29.00 (737)	18.50 (470)	21 (533)	168 (635)	3300 (1497)

Subject to ± 7.5% variation.

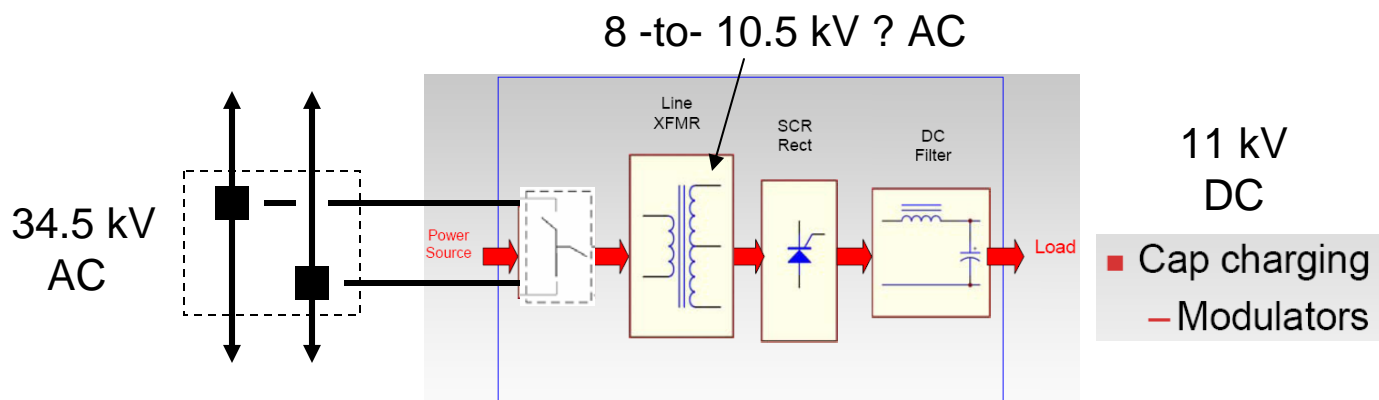


Dead Front Loop Feed

# LESS DIRECT BCD PARTIAL COTS CONFIGURATIONS



OLD BCD PARTIAL COTS CONFIGURATION



NEW BCD PARTIAL COTS CONFIGURATION ?



# BCD COTS CONFIGURATION

