

# 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

25 MAY 2006 1



#### **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

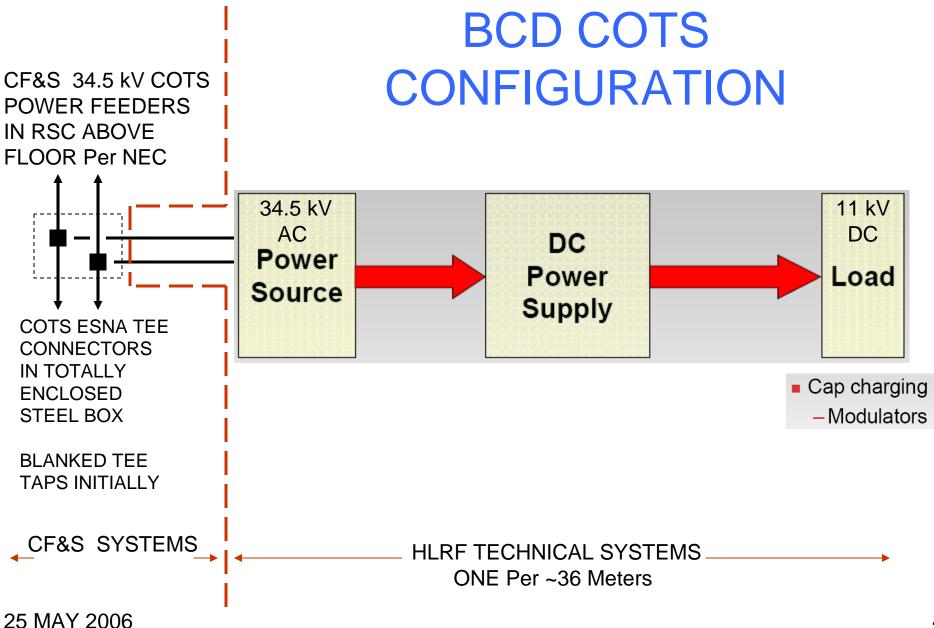
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#### **ACD** Activities

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

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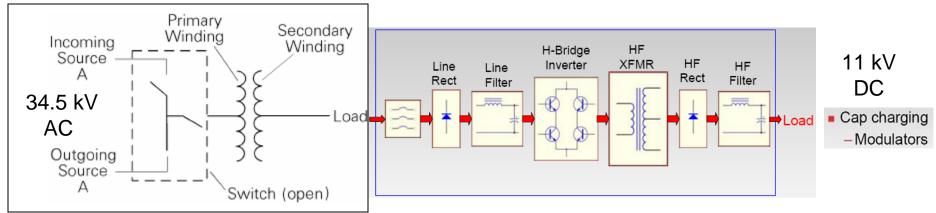


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MAIN LINAC - ELECTRON & POSITRON	Previo	(5)									
					To Dei	onized	Water		To Air		I
							Typical		101		
			Total	l Heat	Suppl	Retur		Accepta		Max	
			Heat	Load to		n	, ,	ble Temp	Heat	Space	
			Load	Water	Temp	Temp	e drop	Variation	Load to	Temp	
Components	Quanti	y Location	(KW)		( c )		Bar	delta C	Air (KW)		Source
RF AC Pwr Transformer 34.548 kV		Service Tunnel	4.00	0.00					4.0		* Clay email 3-14-06 typical 225 kVa ei
AC Pwr Transformer 34.548 kV		Service Tunnel	2.00	0.00					2		* Clay email 3-14-06 typical 112.5 kVa
merg. AC Pwr Transformer 34.548 kV		Service Tunnel	1.00	0.00					1.3		* Clay email 3-14-06 typical 75 kVa oil
C Charging Supply 0.48KvAC-11KvDC		Service Tunnel	15.00	7.50					7.5		* C.Jensen email 2-27-06 183 kVa 0.84
(lystron 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
(lystron Collector		Service Tunnel	61.00	61.00	*35>		2		0		* Shigeki Fukuda Email 3-1-06
(lystron Body		Service Tunnel	10.00	10.00	*35>		5	+-0.2 deg	0		* Shigeki Fukuda Email 3-1-06
(lystron 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
Vaveguide		Accelerator Tunne	4.00	4.00	N/A	N/A	N/A		0.00		* Shigeki Fukuda Email 3-30-06
Other components?????		????								N/A	
	Update	d 25 MAY 2006	165.95	130.70					33.56		
	Update	d 25 MAY 2006	165.95	130.70		onized	Water		33.56 To Air		
	Update	d 25 MAY 2006	165.95	130.70		onized	Water Typical				
	Update	d 25 MAY 2006	165.95		To Dei		Typical	Accepta			
	Update	d 25 MAY 2006			To Dei		Typical (water)	Accepta ble Temp	To Air		
	Update	d 25 MAY 2006	Total	Heat Load to	To Dei	Retur n	Typical (water) pressur	ble Temp	To Air Heat	Max	
MAIN LINAC - ELECTRON & POSITRON	<b>Update</b> Quanti		Total Heat	Heat Load to Water	To Dei Suppl y	Retur n Temp	Typical (water) pressur	ble Temp	To Air Heat Load to	Max Space Temp	Source
MAIN LINAC - ELECTRON & POSITRON Components	Quanti	y Location	Total Heat Load (KW)	Heat Load to Water (KW)	To Dei Suppl y Temp	Retur n Temp	Typical (water) pressur e drop	ble Temp Variation	To Air Heat Load to Air (KW)	Max Space Temp (C)	
Components COMPONENTS SEE THE SECTION & POSITRON COMPONENTS SECTION SE	Quanti	y Location	Total Heat Load (KW)	Heat Load to Water (KW)	To Dei Suppl y Temp	Retur n Temp	Typical (water) pressur e drop	ble Temp Variation	To Air  Heat  Load to  Air (KW)	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kV
Components  AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV	Quanti 1/144	y Location  m Service Tunnel Service Tunnel	Total Heat Load (KW)	Heat Load to Water (KW)	To Dei Suppl y Temp	Retur n Temp	Typical (water) pressur e drop	ble Temp Variation	To Air  Heat Load to Air (KW)  2 1.3	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVa * Clay email 3-14-06 typical 75 kVa oi
Components	Quanti	y Location  m Service Tunnel Service Tunnel Service Tunnel	Total Heat Load (KW) 2.00 1.00	Heat Load to Water (KW) 0.00 0.00	To Dei Suppl y Temp ( C )	Retur n Temp	Typical (water) pressur e drop	ble Temp Variation	To Air  Heat Load to Air (KW)  2 1.3 11.5	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVa * Clay email 3-14-06 typical 75 kVa oi * C.Jensen email 5-25-06
Components  AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV EMERGEN Supply 34.5 kV AC-11 kV DC Klystron Focusing Coil	Quanti 1/144	y Location  M Service Tunnel Service Tunnel Service Tunnel Service Tunnel	Total Heat Load (KW) 2.00 1.00 19.00	Heat Load to Water (KW) 0.00 0.00 7.50 8.40	To Dei Suppl y Temp	Retur n Temp	Typical (water) pressur e drop	ble Temp Variation	To Air  Heat Load to Air (KW)  2 1.3 11.5	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVo * Clay email 3-14-06 typical 75 kVa oi * C.Jensen email 5-25-06 * Shigeki Fukuda Email 4-05-06
Components  AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV Components  Ref Charging Supply 34.5 kV AC-11 kV DC  Ref Charging Focusing Coil	Quanti 1/144	y Location  M Service Tunnel Service Tunnel Service Tunnel Service Tunnel Service Tunnel	Total Heat Load (KW) 2.00 1.00 19.00 8.40	Heat Load to Water (KW) 0.00 0.00 7.50 8.40 7.50	To Dei Suppl y Temp ( C )	Retur n Temp	Typical (water) pressur e drop Bar	ble Temp Variation delta C	To Air  Heat Load to Air (KW)  2 1.3 11.5 0 7.5	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVa * Clay email 3-14-06 typical 75 kVa oi * C.Jensen email 5-25-06 * Shigeki Fukuda Email 4-05-06 * Shigeki Fukuda Email 3-1-06
Components  AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV CRF Charging Supply 34.5 kV AC-11 kV DC Clystron Focusing Coil Modulator Clystron Collector	Quanti 1/144	y Location  Service Tunnel Service Tunnel Service Tunnel Service Tunnel Service Tunnel Service Tunnel	Total Heat Load (KW) 2.00 1.00 19.00 8.40 15.00 61.00	Heat Load to Water (KW) 0.00 0.00 7.50 8.40 7.50 61.00	To Dei Suppl y Temp ( C )  *34>	Retur n Temp	Typical (water) pressur e drop Bar	ble Temp Variation delta C	To Air  Heat Load to Air (KW)  2 1.3 11.5 0 7.5	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVa * Clay email 3-14-06 typical 75 kVa oi * C.Jensen email 5-25-06 * Shigeki Fukuda Email 4-05-06 * Shigeki Fukuda Email 3-1-06 * Shigeki Fukuda Email 3-1-06
Components  AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV EF Charging Supply 34.5 kV AC-11 kV DC Elystron Focusing Coil Modulator Elystron Collector Elystron Body	Quanti 1/144	y Location  M Service Tunnel Service Tunnel Service Tunnel Service Tunnel Service Tunnel	Total Heat Load (KW) 2.00 1.00 19.00 8.40 15.00 61.00	Heat Load to Water (KW) 0.00 0.00 7.50 8.40 7.50 61.00	To Dei Suppl y Temp ( C )  *34>  *35> *35>	Retur n Temp	Typical (water) pressur e drop Bar	ble Temp Variation delta C	To Air  Heat Load to Air (KW)  2 1.3 11.5 0 7.5 0	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVa  * Clay email 3-14-06 typical 75 kVa oi  * C.Jensen email 5-25-06  * Shigeki Fukuda Email 4-05-06  * Shigeki Fukuda Email 3-1-06  * Shigeki Fukuda Email 3-1-06  * Shigeki Fukuda Email 3-1-06
Components  AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV EMER Charging Supply 34.5 kV AC-11 kV DC (lystron Focusing Coil Modulator (lystron Collector (lystron Body (lystron Windows	Quanti 1/144	y Location  Service Tunnel Service Tunnel Service Tunnel Service Tunnel Service Tunnel Service Tunnel	Total Heat Load (KW) 2.00 1.00 19.00 8.40 15.00 61.00 0.50	Heat Load to Water (KW) 0.00 0.00 7.50 8.40 7.50 61.00	To Dei Suppl y Temp ( C )  *34>  *35> *35> *35>	Retur n Temp (C)	Typical (water) pressur e drop Bar  2 5	ble Temp Variation delta C	To Air  Heat Load to Air (KW)  2 1.3 11.5 0 7.5 0 0	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVa * Clay email 3-14-06 typical 75 kVa oi * C.Jensen email 5-25-06 * Shigeki Fukuda Email 4-05-06 * Shigeki Fukuda Email 3-1-06 * Shigeki Fukuda Email 3-1-06
Components  AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV EMERGEN Supply 34.5 kV AC-11 kV DC (lystron Focusing Coil Modulator (lystron Collector (lystron Body (lystron Windows Relay Racks	Quanti 1/144	y Location  Service Tunnel	Total Heat Load (KW) 2.00 1.00 19.00 8.40 15.00 61.00 0.50 13.25	Heat Load to Water (KW) 0.00 0.00 7.50 8.40 7.50 61.00 10.00 0.50	To Dei Suppl y Temp ( C )  *34>  *35> *35>	Retur n Temp	Typical (water) pressur e drop Bar	ble Temp Variation delta C	To Air  Heat Load to Air (KW)  2 1.3 11.5 0 7.5 0 0 11.26	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVa * Clay email 3-14-06 typical 75 kVa oi * C.Jensen email 5-25-06 * Shigeki Fukuda Email 4-05-06 * Shigeki Fukuda Email 3-1-06
Components  AC Pwr Transformer 34.548 kV Emerg. AC Pwr Transformer 34.548 kV EF Charging Supply 34.5 kV AC-11 kV DC Klystron Focusing Coil Modulator Klystron Collector Klystron Body Klystron Windows Relay Racks Charging Supply	Quanti 1/144	y Location  Service Tunnel	Total Heat Load (KW) 2.00 1.00 19.00 8.40 15.00 61.00 0.50 13.25 7.50	Heat Load to Water (KW) 0.00 0.00 7.50 8.40 7.50 61.00 10.00 0.50 0.00 7.50	To Dei Suppl y Temp ( C )  *34>  *35>  *35> N/A	Retur n Temp (C)	Typical (water) pressur e drop Bar  2 5	ble Temp Variation delta C	To Air  Heat Load to Air (KW)  2 1.3 11.5 0 7.5 0 0 11.26	Max Space Temp (C)	* Clay email 3-14-06 typical 112.5 kVa * Clay email 3-14-06 typical 75 kVa oi * C.Jensen email 5-25-06 * Shigeki Fukuda Email 4-05-06 * Shigeki Fukuda Email 3-1-06
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## MOST DIRECT BCD COTS CONFIGURATION POSSIBLE





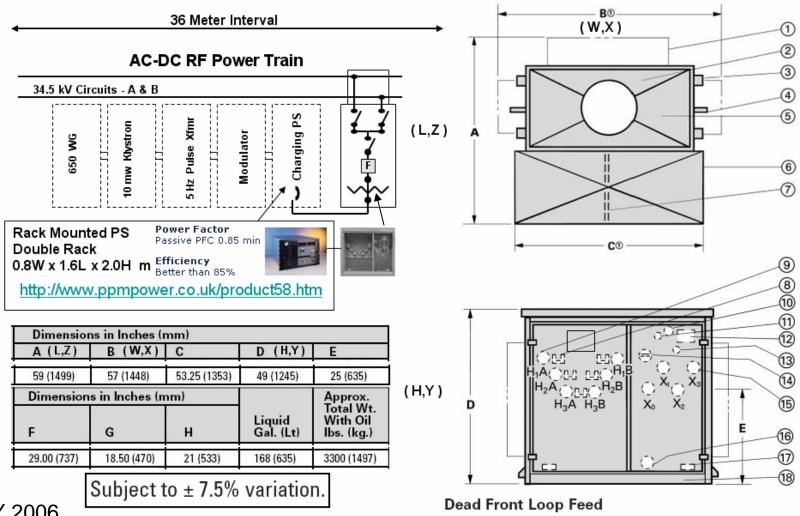


HLRF TECHNICAL SYSTEMS
ONE Per ~36 Meters

25 MAY 2006 6



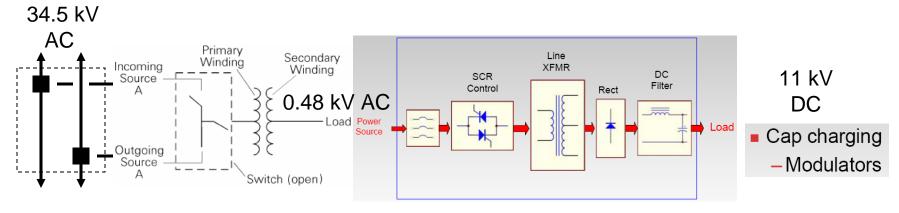
## MOST DIRECT BCD COTS CONFIGURATION POSSIBLE



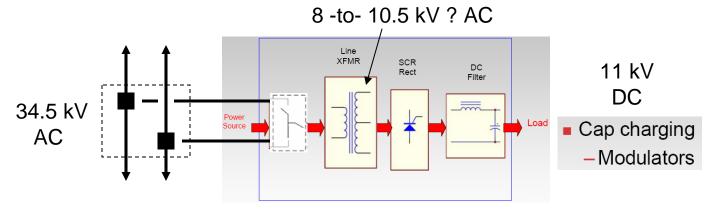
25 MAY 2006



## LESS DIRECT BCD PARTIAL COTS CONFIGURATIONS



#### OLD BCD PARTAIL COTS CONFIGURATION



**NEW BCD PARTIAL COTS CONFIGURATION?** 

25 MAY 2006 8

