

PHENIX MUON  
IDENTIFIER MECHANICS

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for the PHENIX Collaboration

29 April 1998

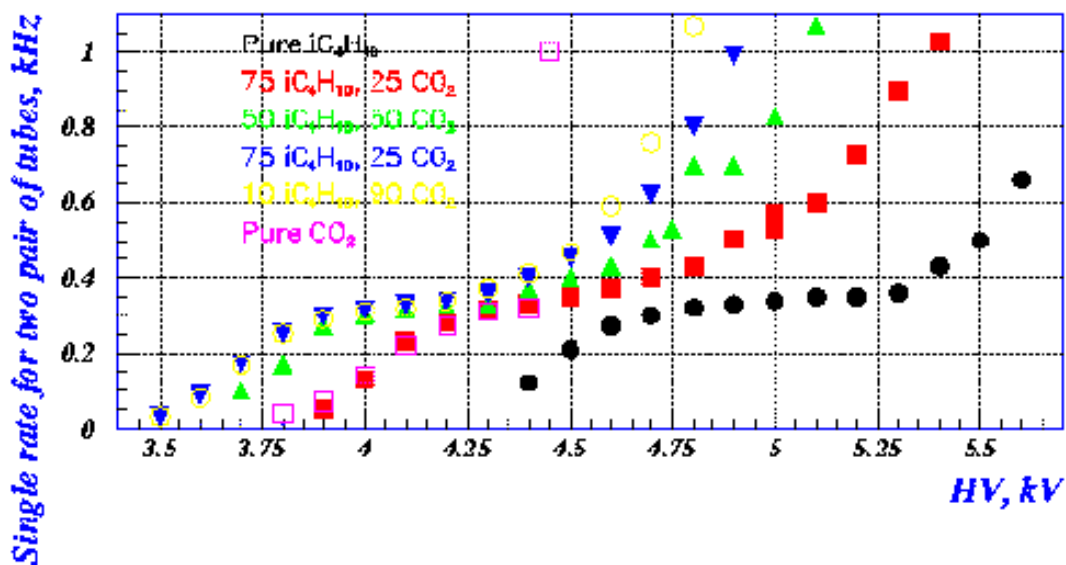
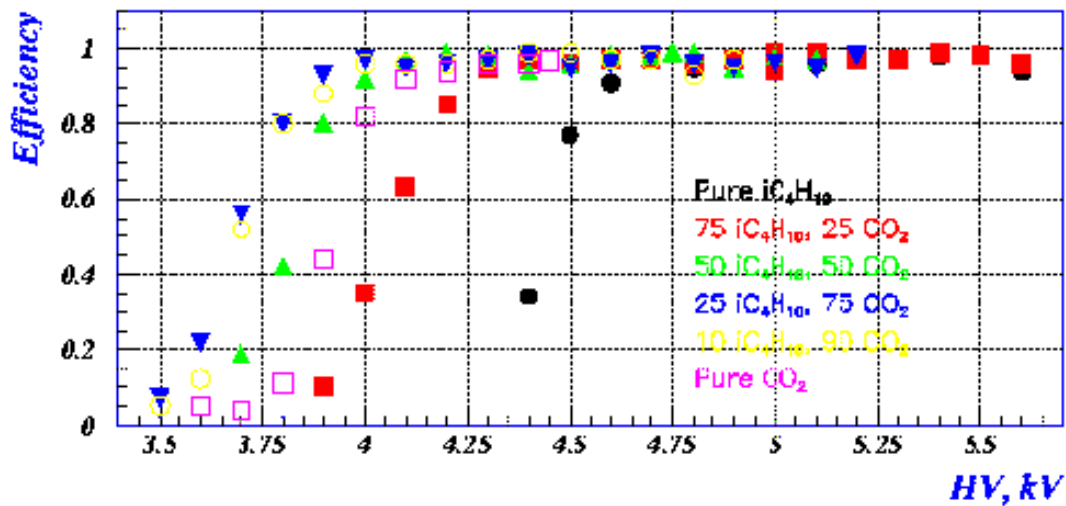
Muon Arms VTC

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- Changes since last muon meeting
  
  - Factory Status
    - BNL
    - Japan
  
  - Schedule
  
  - Costs

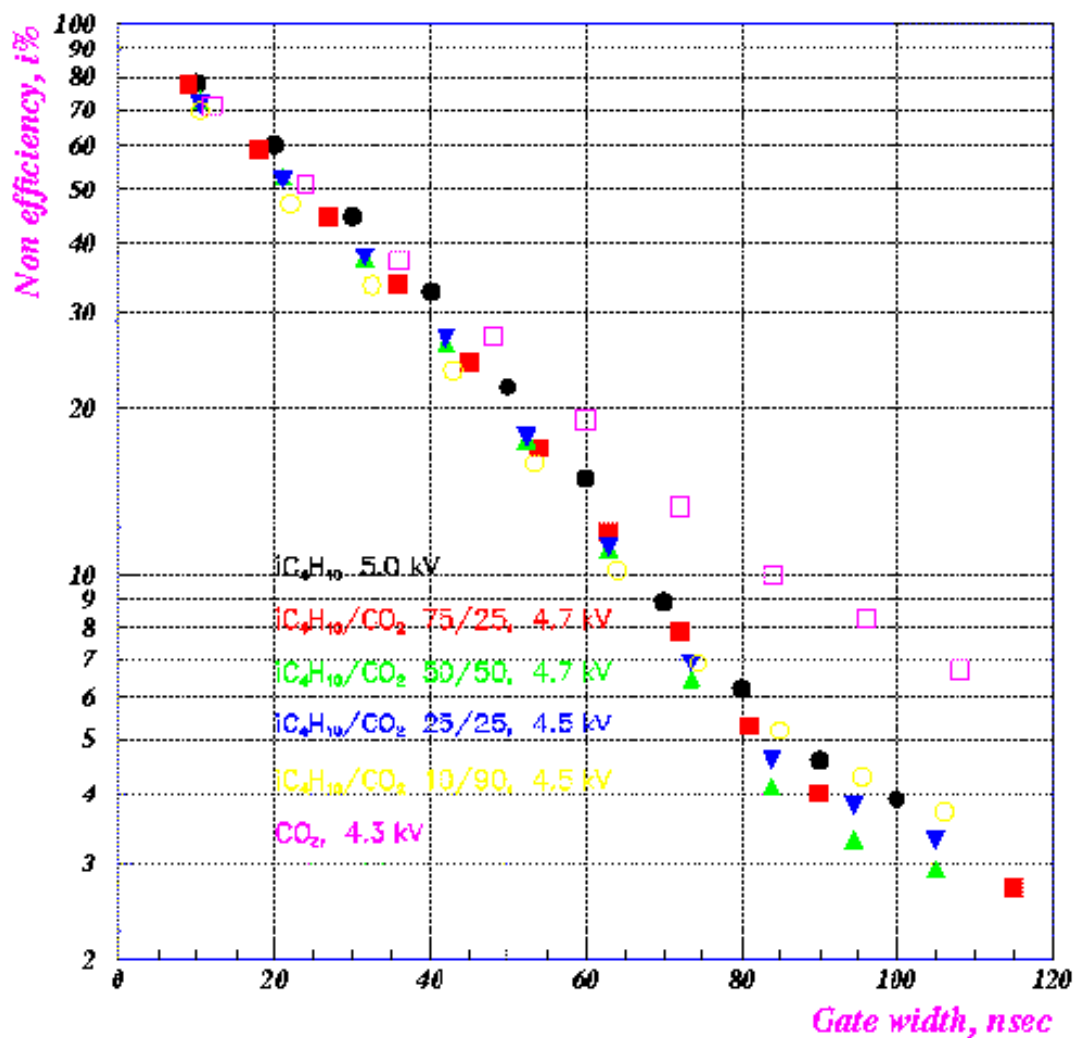
- 5 installed gaps per arm, 6 panels per gap (already discussed and decided by Muon Arms group)
- **Gas choice:** 9% Isobutane : 25%  $CO_2$  as baseline
- 25% Isobutane : 75%  $CO_2$  not yet precluded by any actions

97/04/11 10.23

### Isobutane, Carbon Dioxide



97/04/11 14.51

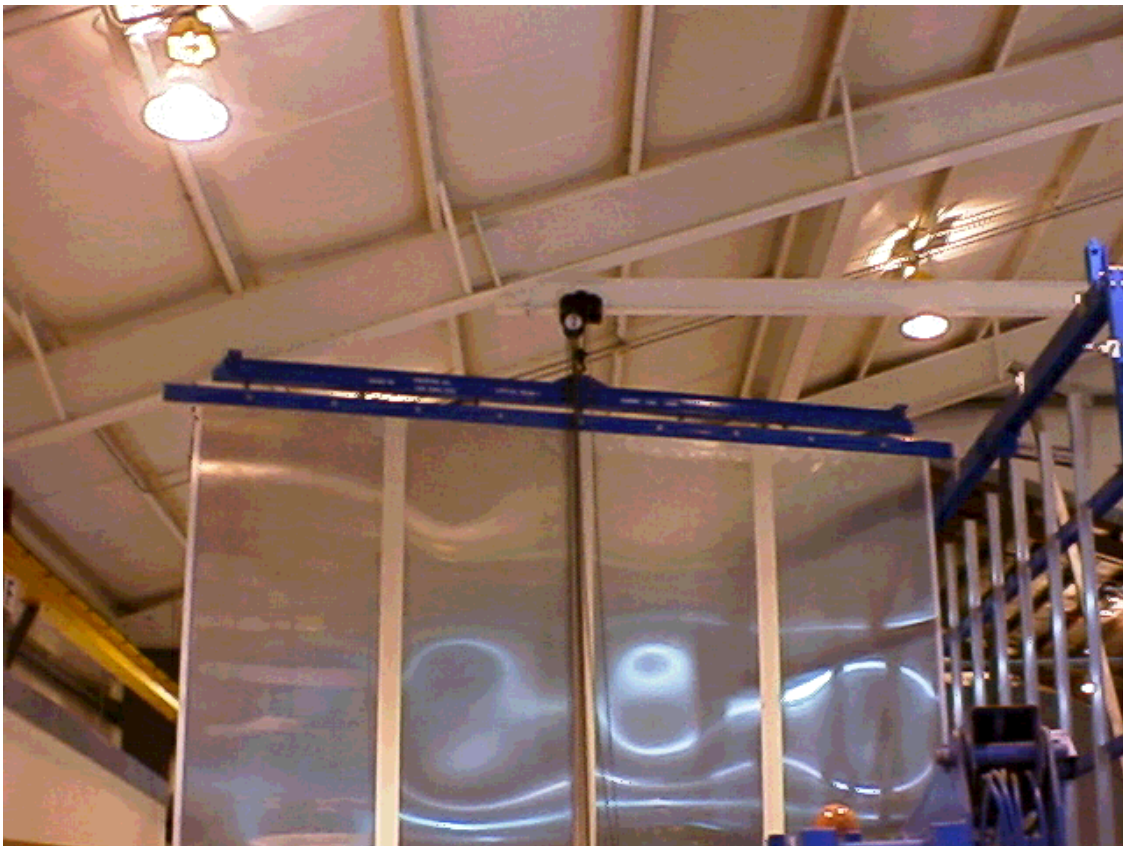


- 3 large panels complete
- 1 empty panel INSTALLED
- 4 large panel assembly tables
- QA-conditioning area
- Manpower:
  - 6 BNL techs
  - 1 BNL supervisor tech
  - 1 machinist
  - 2 sheet metal workers
  - 1 welder
  - 7 physicists (2 from CIAE, 2 from RIKEN, 3 from ORNL)
  - 15 undergrads







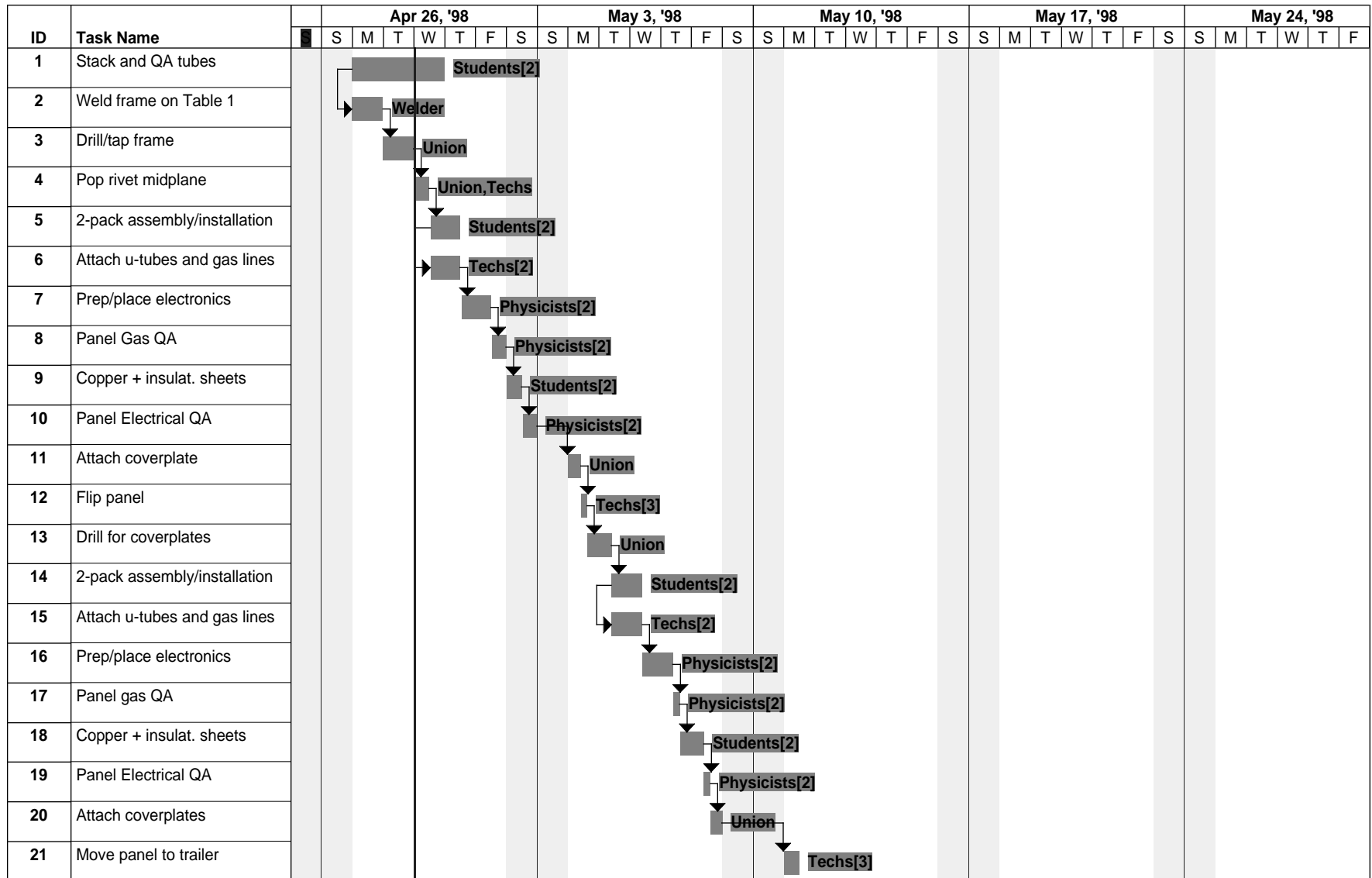




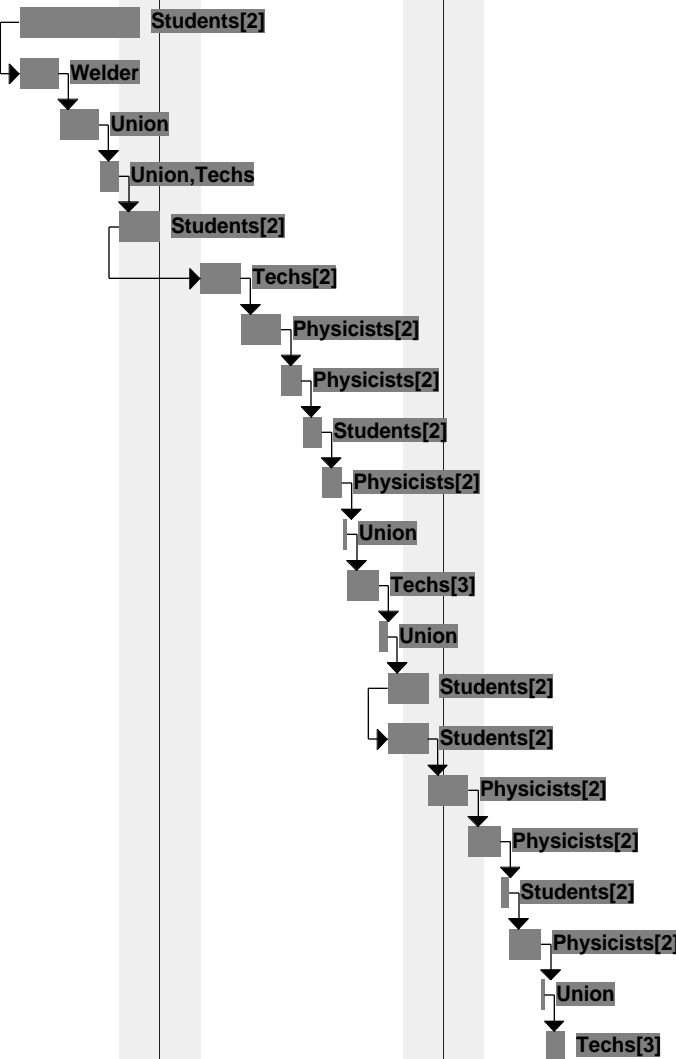
- To construct 20 small panels and ship to BNL
- 5 panels already in transit!
- Last panels arrive at beginning of September 1998

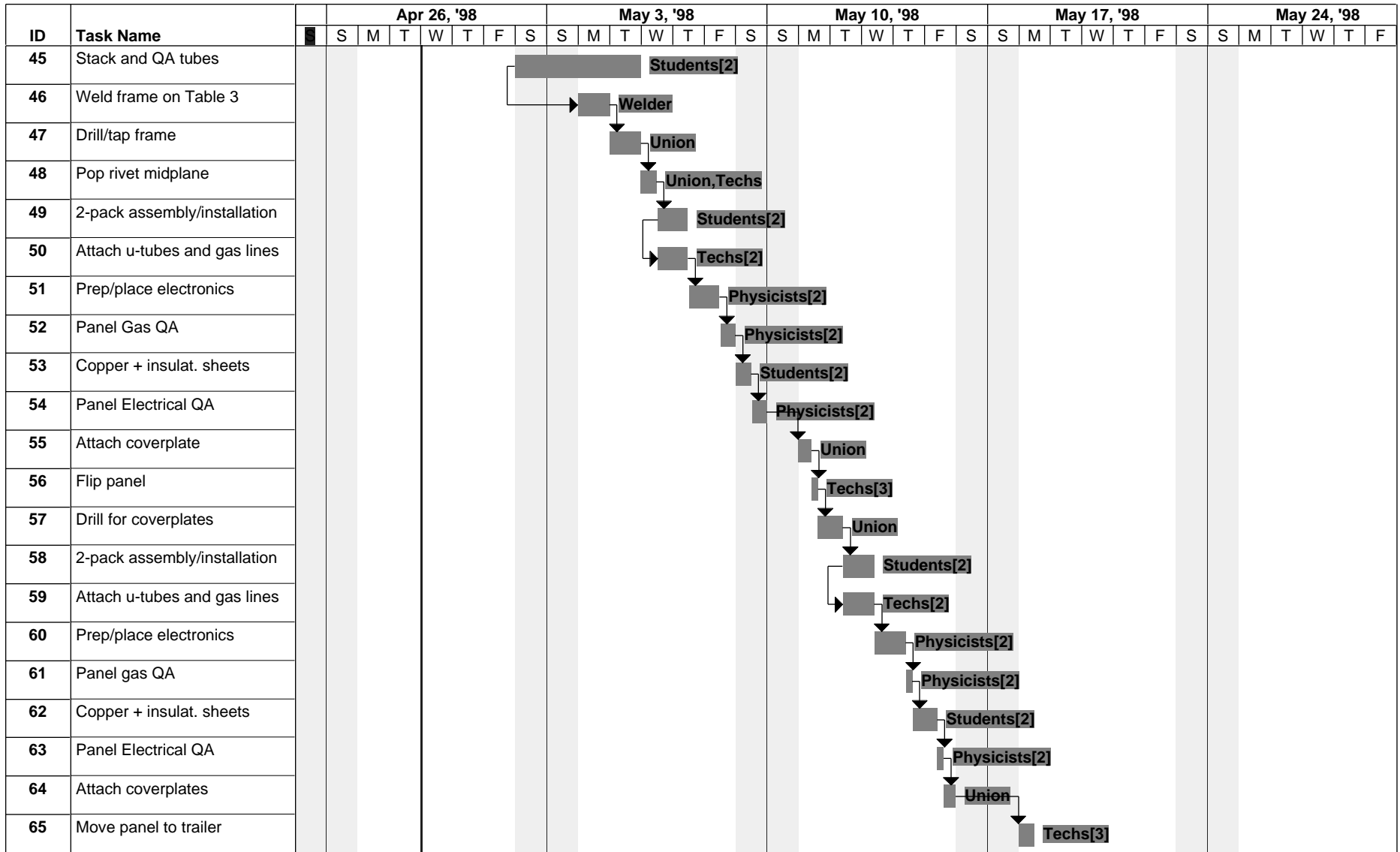
- 
- Need to install 2 large and 1 small panel per week on average beginning in May.
  - Last panel must be installed before September 30, 1998.

- Total required AEE cost (including past spending) \$2.88 M plus 10% contingency.
- Discussions underway with RIKEN concerning appropriate cost sharing. (Large panels are twice as large and there are twice as many of them.)



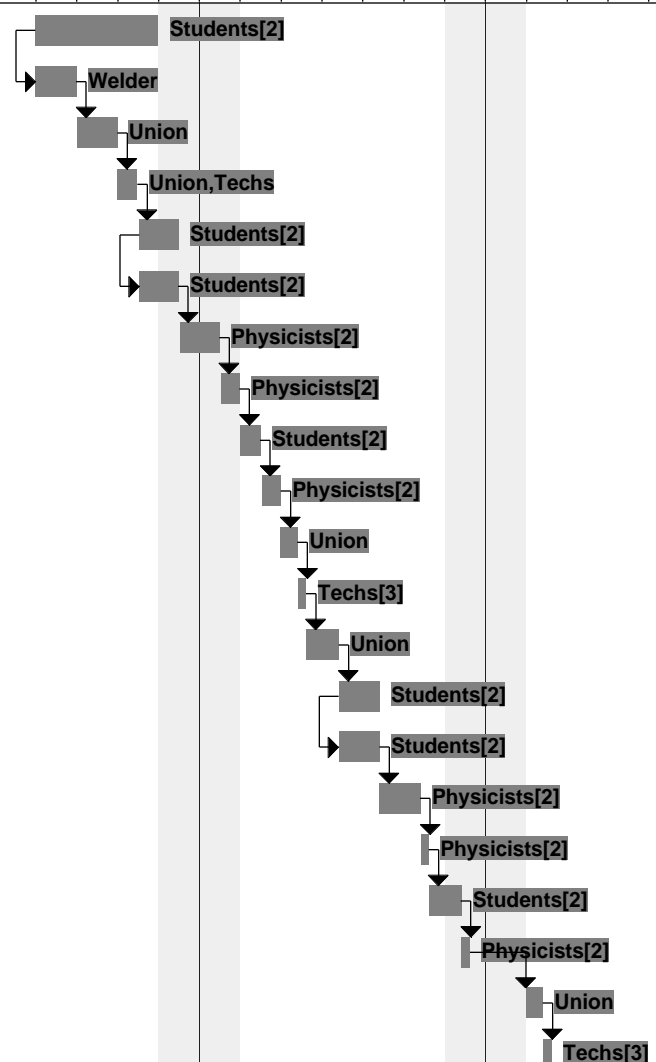
ID	Task Name	Apr 26, '98							May 3, '98							May 10, '98							May 17, '98							May 24, '98									
		S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S			
23	Stack and QA tubes																																						
24	Weld frame on Table 2																																						
25	Drill/tap frame																																						
26	Pop rivet midplane																																						
27	2-pack assembly/installation																																						
28	Attach u-tubes and gas lines																																						
29	Prep/place electronics																																						
30	Panel Gas QA																																						
31	Copper + insulat. sheets																																						
32	Panel Electrical QA																																						
33	Attach coverplate																																						
34	Flip panel																																						
35	Drill for coverplates																																						
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42	Attach coverplates																																						
43	Move panel to trailer																																						







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AEE Funding												
								Total:	2,881.3		3,178.9	
			hrs./unit	tot hrs	Tech							
	No. Units		Labor rate	Total Labor	Hour \$ rate	Total Lab cost	Unit cost (\$)	Total Unit cost	Total Lab+Font.	%	Total Cost	Comments
LST's									970.7		970.7	
Large panels tubes	730tube						0.1328	970.7	970.7	0%	970.7	
LST QA									24.0		28.8	60% of Large Panel QA charged to AEE; 40% + Panel QA charged to R
Large Panels	2FTE		1049	2098	0.0114	24.0		0.0	24.0	20%	28.8	
QA Infastructure									54.3		65.2	
Shelving	1ea					0.0	10.0000	10.0	10.0	20%	12.0	
Scopes	1ea						5.0000	5.0	5.0	20%	6.0	
Instrumentation	1ea						2.3000	2.3	2.3	20%	2.8	
Gas, labels, Pens, Solder	1ea						7.0000	7.0	7.0	20%	8.4	
DAQ	1ea						30.0000	30.0	30.0	20%	36.0	
Software	1ea						0.0000	0.0	0.0	20%	0.0	
HV	16channel						0.0000	0.0	0.0	20%	0.0	
Assembly Infastructure									261.0		316.2	
Building Mods	1ea						30.0000	30.0	30.0	30%	39.0	
Cranes	4ea						3.0000	12.0	12.0	20%	14.4	
Labor Contract	1ea						12.0000	12.0	12.0	20%	14.4	
Assembly tables	4ea						33.0000	132.0	132.0	20%	158.4	
Vertical Stands	1ea						10.0000	10.0	10.0	20%	12.0	
Panel Dolly	1ea						55.0000	55.0	55.0	20%	66.0	
Vacuum Lifters	4ea						0.7500	3.0	3.0	20%	3.6	
Work Tables & Jigs	4table						1.7500	7.0	7.0	20%	8.4	

Panels - Large											AEE charged 60% of large panels, RIKEN charged 40% of small panels.
								276.6		309.6	
Frames	24panel					5.5000	132.0	132.0	10%	145.2	
Gas tubing inside panels	0.6					18.2000	10.9	10.9	20%	13.1	
Tape, etc.	0.6					17.2000	10.3	10.3	20%	12.4	
Preamp, HV distribution	0.6					117.0000	70.2	70.2	10%	77.2	
Ground Return caps, etc.	0.6					10.0000	6.0	6.0	20%	7.2	
Internal HV & LV cables	0.6					9.0000	5.4	5.4	30%	7.0	
Bindi Connectors	0.6					54.0000	32.4	32.4	10%	35.6	
Other electrical connectors	0.6					12.0000	7.2	7.2	30%	9.4	
Gas connectors	0.6					3.6000	2.2	2.2	15%	2.5	
Panel Assmebly											
								589.8		707.8	
Techs at BNL	7FTE	1137	7958	0.0331	263.4		0.0	263.4	20%	316.1	
Supervisor	1FTE	1399	1399	0.0407	56.9		0.0	56.9	20%	68.3	
Machinists + Welder	3FTE	787	2361	0.0600	141.7		0.0	141.7	20%	170.0	
CIAE Tech	1FTE	900	900	0.0100	9.0		0.0	9.0	20%	10.8	
Students	11FTE	900	9900	0.0120	118.8		0.0	118.8	20%	142.6	
Gas System											
								149.5		181.2	
Design Fire Monitor System	1.5mo	145	217	0.1100	23.9		0.0	23.9	20%	28.7	
Fire monitor system-North	11channel					2.0000	22.0	22.0	20%	26.4	
Design flow monitor system	4mo	145	580	0.1100	63.8		0.0	63.8	20%	76.6	
Valves/electronics for flow - North	33channel					0.0300	9.9	9.9	20%	11.9	
Flow monitor system - North	33channel					0.0240	7.9	7.9	15%	9.1	
Distribution Manifold - North	1ea					10.0000	10.0	10.0	30%	13.0	
Gas analyzer	1ea					10.0000	10.0	10.0	30%	13.0	
Gas Mixer	1ea					2.0000	2.0	2.0	30%	2.6	

HV System, LV and Signals Out										126.2	146.5	
Power supplies - North	330channel						0.2500	82.5	82.5	15%	94.9	
HV Cables - North	750m						0.0053	4.0	4.0	20%	4.8	
LV Cables - North	750m						0.0106	8.0	8.0	20%	9.5	
Signal Cables - North	750m						0.0200	15.0	15.0	15%	17.3	
Connectors - North	1						6.7500	6.8	6.8	20%	8.1	
Cable races - North	400m						0.0250	10.0	10.0	20%	12.0	
Rail System										29.6	38.5	
North Arm	1						20.0000	20.0	20.0	30%	26.0	
Rail Installation - North	2FTE	80	160	0.0600	9.6				9.6	30%	12.5	
Expenses in MFH										64.0	78.9	
Transport From Assembly- North	30panel						0.6000	18.0	18.0	30%	23.4	
Alignment - North	6day	8	48	0.0331	1.6				1.6	30%	2.1	
Panel Installation - North	1FTE	1312	1312	0.0331	43.4				43.4	20%	52.1	
Modifications to Hall - North	1						1.0000	1.0	1.0	30%	1.3	
Previous Commitments to ORNL										335.5	0%	335.5