



U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Science

# 325 MHz – FY16 Budget Request

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PIP-II Budget Retreat  
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# PIP-II 325 MHz - FY16 Initial Goals

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## SSR1 CM + Facilities + PIP-II Resonance Control

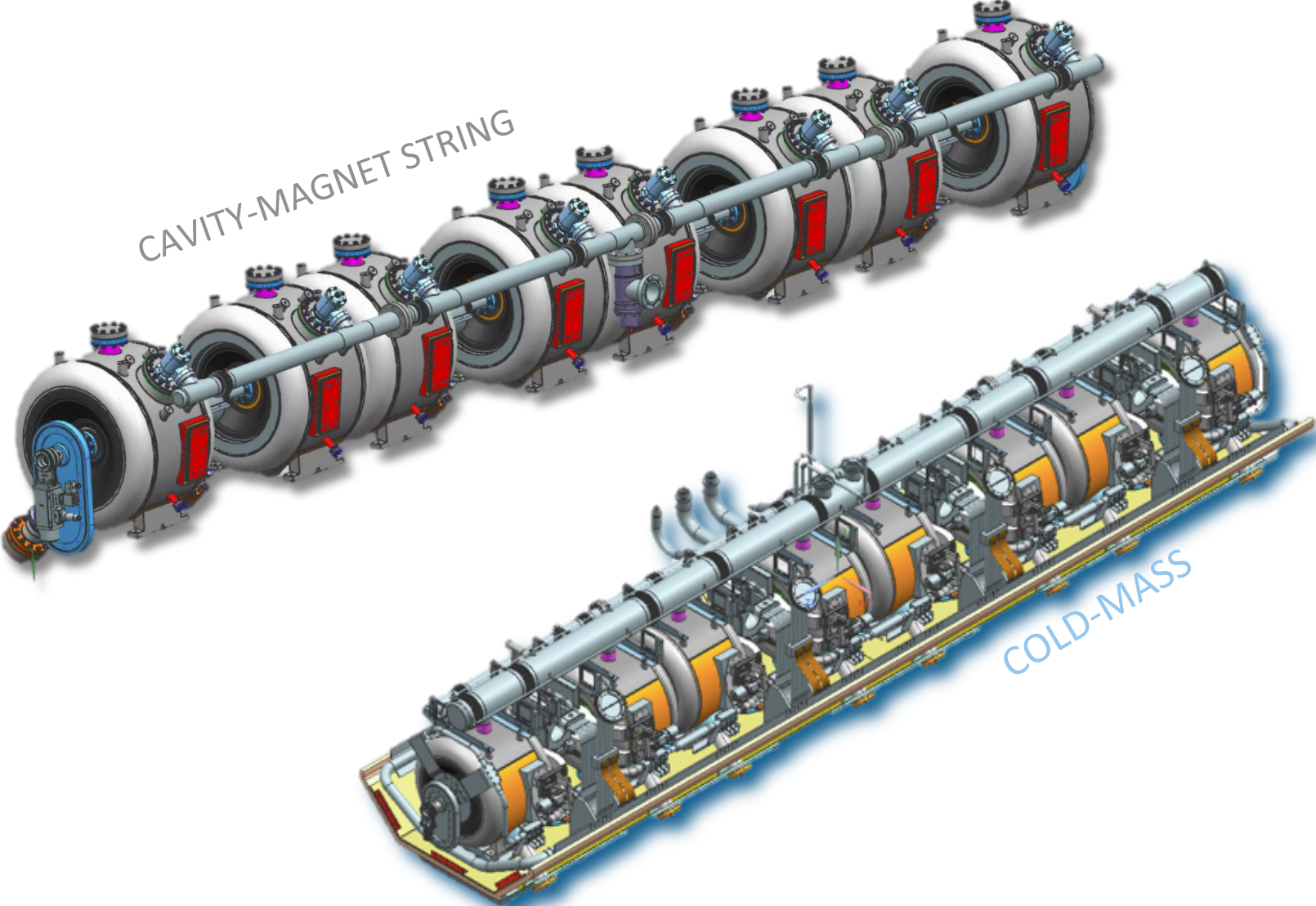
- **SSR1 CM cavity string**
  - 8 + 2 cavities: BCP, HPR, Heat treat
  - 8 + 2 couplers: RF condition
  - 8 + 2 cavity-coupler qualification in STC
- **SSR1 cold mass design, tooling, procurement and assembly**
  - Cold mass drawings, procurement of cold mass components
  - Design tooling for lifting cavity string and lowering onto strongback
  - Pre-assemble strongback with lower shields, insulation etc.. Perform installation of cavity string on strongback.
- **Facilities: Lab 2**
  - Continue to manage renovation operations (crane, cleanroom etc.)
  - Rail system + Tooling for string assembly in Lab2 (325MHz & 650MHz)
  - Design/Procure horizontal HPR system

# PIP-II 325 MHz - FY16 Initial Goals (continued)

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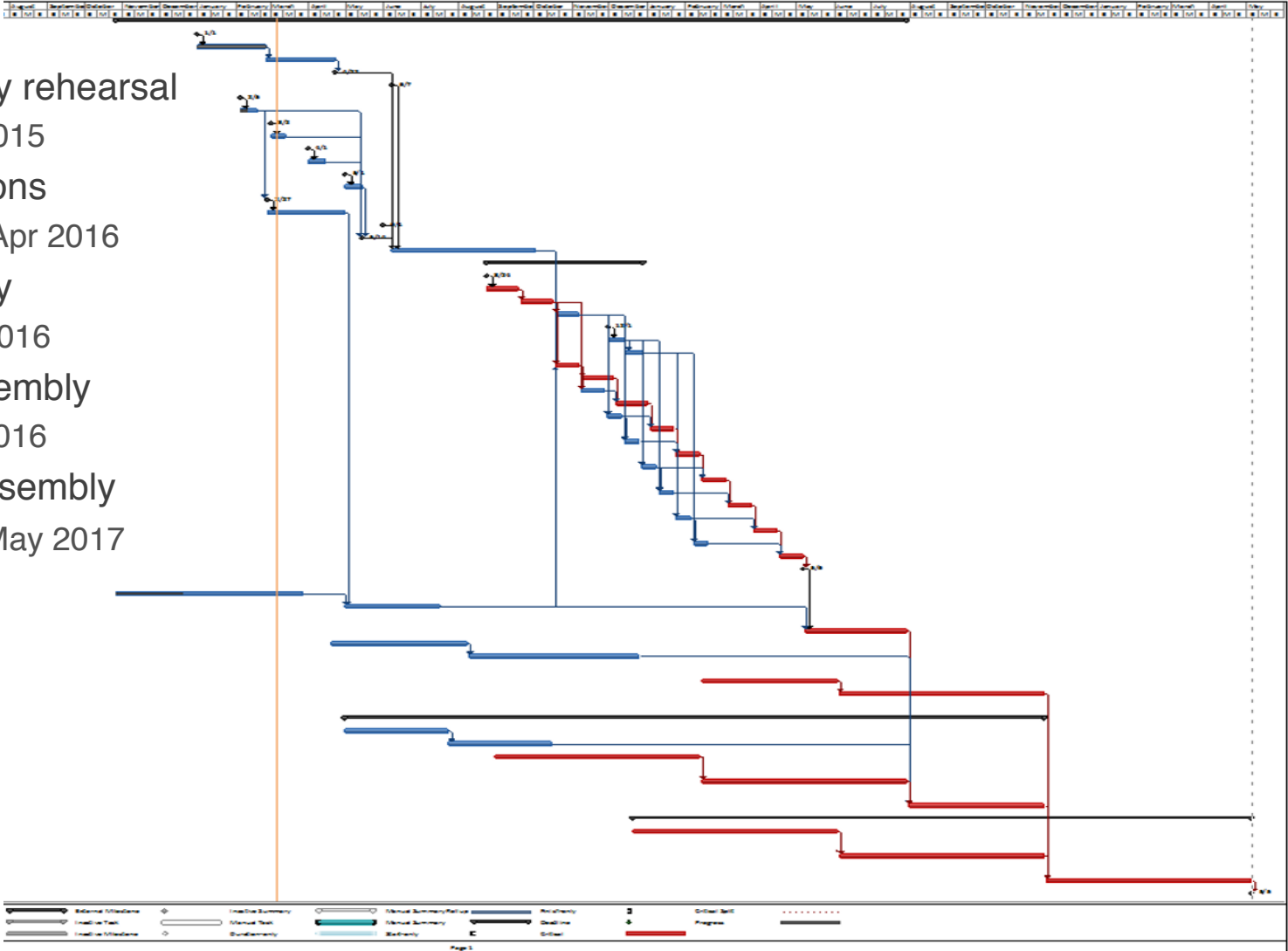
- SSR1 cryomodules design and initiation of procurement
  - Finalize design of cryomodule piping, define assembly procedure.
  - Initiate procurement of remaining cryomodule components
- PIP-II Resonance Control
  - Demonstrate successful compensation of LFD and Microphonics in STC
- Support Conceptual Design Report (CDR) development

# String and Cold-Mass



# SSR1 Cryomodule Schedule

- String assembly rehearsal
  - July - Aug 2015
- Cav. qualifications
  - Nov 2015 - Apr 2016
- String assembly
  - May - July 2016
- Cold mass assembly
  - Aug - Nov 2016
- Cryomodule assembly
  - Oct 2016 - May 2017



# Cavity Status

SNAPSHOTS OF THIS LIVE DOCUMENT ARE UPLOADED ON TEAMCENTER - ED0002558

OPERATION -->		Meyer Tool					ICB	ICB	IB4	ICB	ICB	ICB	IB4		ANL	ANL	MP9	STC (MDB)
LINKS TO ONBASE	LINKS TO VECTOR (ONSITE ACCESS ONLY)	Vendor Donato	Vendor Donato	Vendor	Vendor Donato	Vendor Donato	Derek Donato	Paolo Donato	Oscar Donato	Damon Donato	Derek Donato	Derek Donato	Paolo Mohamed	Paolo Donato	Brent	Brian	Margherita	Joe
Jacketing		Niobium tube machining		Vendor Dim. Inspection	Pressure Test	Leak Check	Visual QC	RF Tune + vacuum cycle	Dimensional QC	Flanges maintenance	Leak QC	df/dp measurement (no tuner)	RF beadpull	Reference system for alignment	Light BCP	HPR + prep for STC	120 C Bake	STC Tests
TRAVELER # -->							464208										464121	
S103 history	<a href="#">S103 travelers</a>																	
S104 history	<a href="#">S104 travelers</a>																	
S105 history	<a href="#">S105 travelers</a>	type B																
S106 history	<a href="#">S106 travelers</a>	type B																
S107 history	<a href="#">S107 travelers</a>	type A, 325.010 MHz	skipped					324.810 MHz	skipped	skipped		8.0 Hz/Torr	FF=96.7%					in proc
S108 history	<a href="#">S108 travelers</a>	type A, 324.160 MHz		Dimensional Inspection Report	Pressure Test Report	Leak Check Report	Visual Inspection Traveler		to be repeated CMM Traveler	Flanges Maintenance Traveler	Brake RD-88 links	-1.2 Hz/Torr						
S109 history	<a href="#">S109 travelers</a>	type A, 324.510 MHz		Dimensional Inspection Report	Pressure Test Report	Leak Check Report	Visual Inspection Traveler	324.712 MHz	CMM Traveler	Flanges Maintenance Traveler	Leak Check Traveler	5.4 Hz/Torr						
S110 history	<a href="#">S110 travelers</a>	type A, 324.616 MHz		Dimensional Inspection Report	Pressure Test Report	Leak Check Report	Visual Inspection Traveler	324.672 MHz	CMM Traveler	Flanges Maintenance Traveler	Leak Check Traveler	5.7 Hz/Torr						
S111 history	<a href="#">S111 travelers</a>	type A, 324.925 MHz	completed 4/8/2015	Dimensional Inspection Report	Pressure Test Report	Leak Check Report	Visual Inspection Traveler	324.775 MHz	CMM Traveler	Flanges Maintenance Traveler	Leak Check Traveler	14.9 Hz/Torr						
S112 history	<a href="#">S112 travelers</a>	type B	completed 6/4/2015	Dimensional Inspection Report	Pressure Test Report	Leak Check Report	Visual Inspection Traveler	324.776 MHz	CMM Traveler									
S113 history	<a href="#">S113 travelers</a>	type B	completed 5/14/2015	Dimensional Inspection Report	Pressure Test Report	Leak Check Report	Visual Inspection Traveler	324.809 MHz	CMM Traveler			8 Hz/Torr						
S114 history	<a href="#">S114 travelers</a>	type B																
S1H-RK-115	S1H-RK-115																	

# PIP-II 325 MHz – Resources Required to Meet Initial Goals

## Initial Budget Request for 325 MHz

	<u>FTE</u>		<u>SWF</u>		<u>M&amp;S</u>		<u>Tot. Directs</u>
Original Target	12.00	\$	1,524,000	\$	1,005,000	\$	2,529,000
Current Request	18.25	\$	1,991,803	\$	760,000	\$	2,751,803
<b>(Over)/Under Target</b>	<b>(6.25)</b>	<b>\$</b>	<b>(467,803)</b>	<b>\$</b>	<b>245,000</b>	<b>\$</b>	<b>(222,803)</b>

- Currently (June 2015) the total 325 MHz effort is at 13-14 FTE
  - SSR1 ~ 11 FTE
  - Lab2 ~ 1 FTE
  - Resonance Control ~ 1.5 FTE
- Current request of 18.25 FTE + \$760K M&S allows to meet the goals with emphasis on string and cold-mass completion.
- With a Total Direct of \$2.5-2.7M it will be possible to meet the goals, with the following options:
  - Ratio of SWF/M&S can be adjusted to favor investments in infrastructures (higher M&S to cover Lab2 HPR) or activities for string assembly (higher SWF).

# PIP-II 325 MHz – FTE – By OHAP Category, Role and Div.

## FTE - By Job Category - Job Role - Home D/S/C

### 325 MHz

<u>Category</u>	<u>Role</u>	<u>Home D/S/C</u>	<u>Tot. FTE</u>	<u>SWF before OH</u>
Design	Mechanical Drafter		2.00	\$ 164,093
Mechanical Engineer	Mechanical Analysis Engineer		5.00	\$ 609,971
Electrical Engineer	RF Design Engineer		2.00	\$ 243,988
Other Technical	QC Technical		0.25	\$ 26,294
Scientist	RF Scientist		2.00	\$ 321,152
Mechanical Technicia	Mechanical Assembly Technician	0	6.00	\$ 529,953
Other Administration	Administrative Support		0.50	\$ 38,240
Procurement	Procurement		0.50	\$ 58,112
<b>Grand Total</b>			<b>18.25</b>	<b>\$ 1,991,803</b>

- Mech Drafter: Drawings for Tooling, Cryomodule and Facilities
- Mech Engineer: Design of cryomodule components, tooling, Facilities.
- RF engineer: Coupler conditioning, tests/troubleshooting, Cavity RF tuning
- RF Scientist: Cavity qualifications + Resonance Control studies
- Technician: Cavity chemistry and preparations for tests, vacuum checks, tooling assembly/troubleshooting, cavity string assembly.



# PIP-II 325 MHz – Achievable Goals at Initial Target

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## Initial Budget Request for 325 MHz

	<u>FTE</u>		<u>SWF</u>		<u>M&amp;S</u>		<u>Tot. Directs</u>
Original Target	12.00	\$	1,524,000	\$	1,005,000	\$	2,529,000

- In the scenario of a budget reduction from the original target, the following measures can be taken:
  - \$250K Delay String assembly to 2<sup>nd</sup> half of FY16... Delay processing/qualification of cavities (~\$50K direct/ea), budget for only 50% of cavities in FY16
  - \$500K Delay procurements and assembly of cold-mass to FY17 (+1yr) and Cryomodule to FY18 (+1yr)
    - Save ~ 1-2 FTE
    - Cold mass tooling shields and piping (save ~\$300K)
    - Cryomodule tooling and initial procurements (save ~\$100K)