Budgets and Schedules

by
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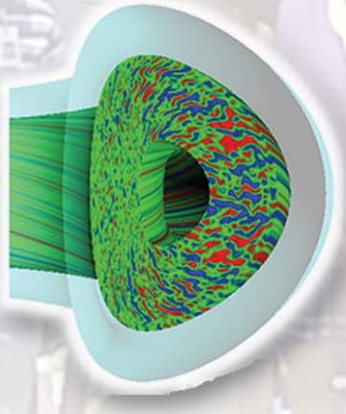
Presented at
Office of Fusion Energy Science
FY08 Budget Planning Meeting
Washington, DC



March 14–15, 2006

FY07 Research Goals

12 Weeks Operation

- **Milestone 163: Assess the synergistic effect of plasma rotation and feedback control of plasma instabilities**
- **Milestone164: Quiescent H-mode experiments with co plus counter injection**
- **Milestone165: Evaluate the use of non-axisymmetric magnetic fields for ELM control in ITER relevant plasmas**

25 Weeks Operation (Incremental)

- **Milestone166: Assess stability limits compatible with steady-state operation in advanced tokamak plasmas with high triangularity double null configuration**
- **Milestone167: Evaluate modulated electron cyclotron current drive for stabilizing neoclassical tearing modes**

FY08 Research Goals

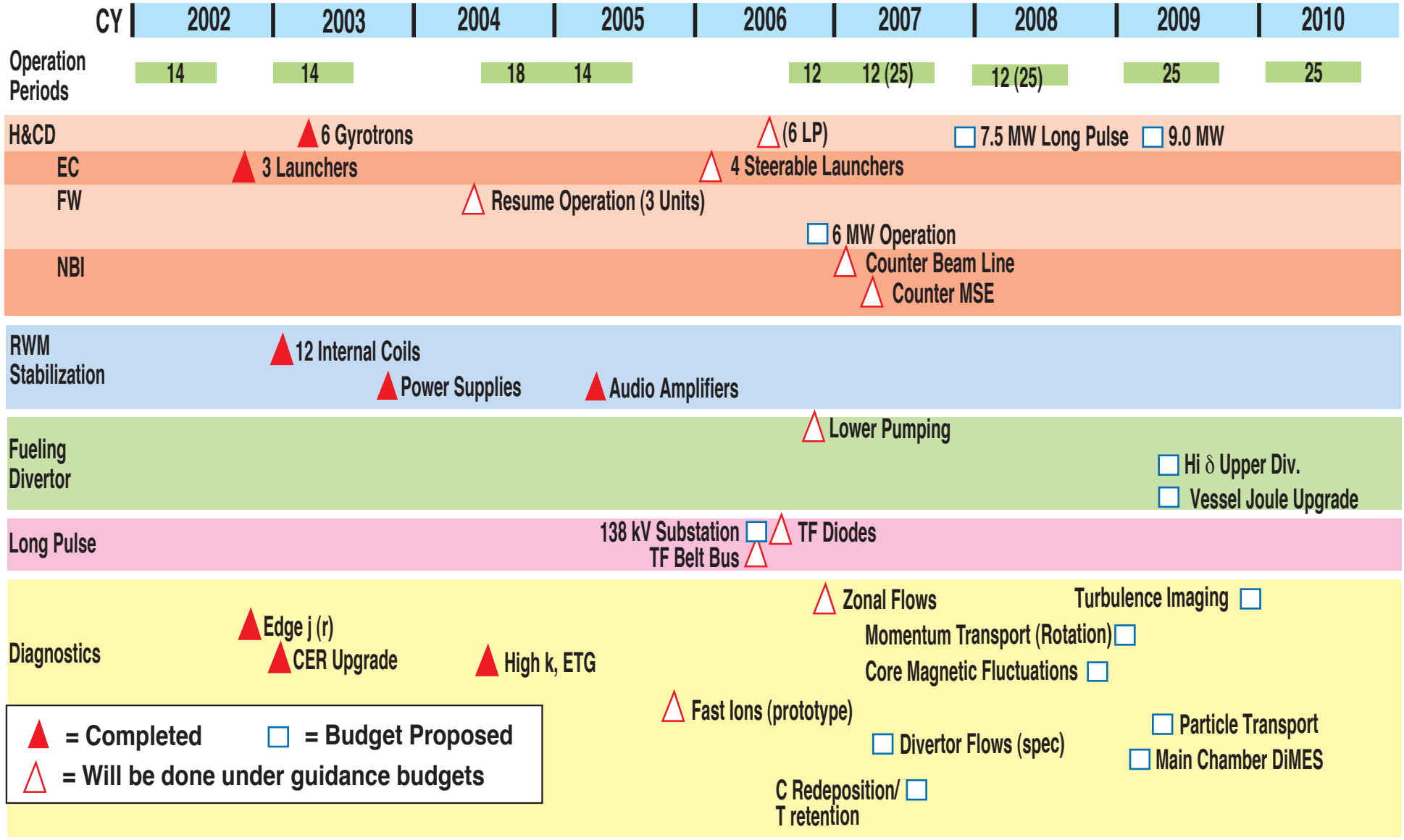
12 Weeks Operation

- **Milestone168: Compare Disruption Mitigation by high-pressure gas injection with theoretical predictions**
- **Milestone169: Separating the Role of Plasma Rotation and Magnetic Shear in the Stabilization of Turbulence**
- **Milestone170: Assessment of the optimum current profile for steady-state operation**

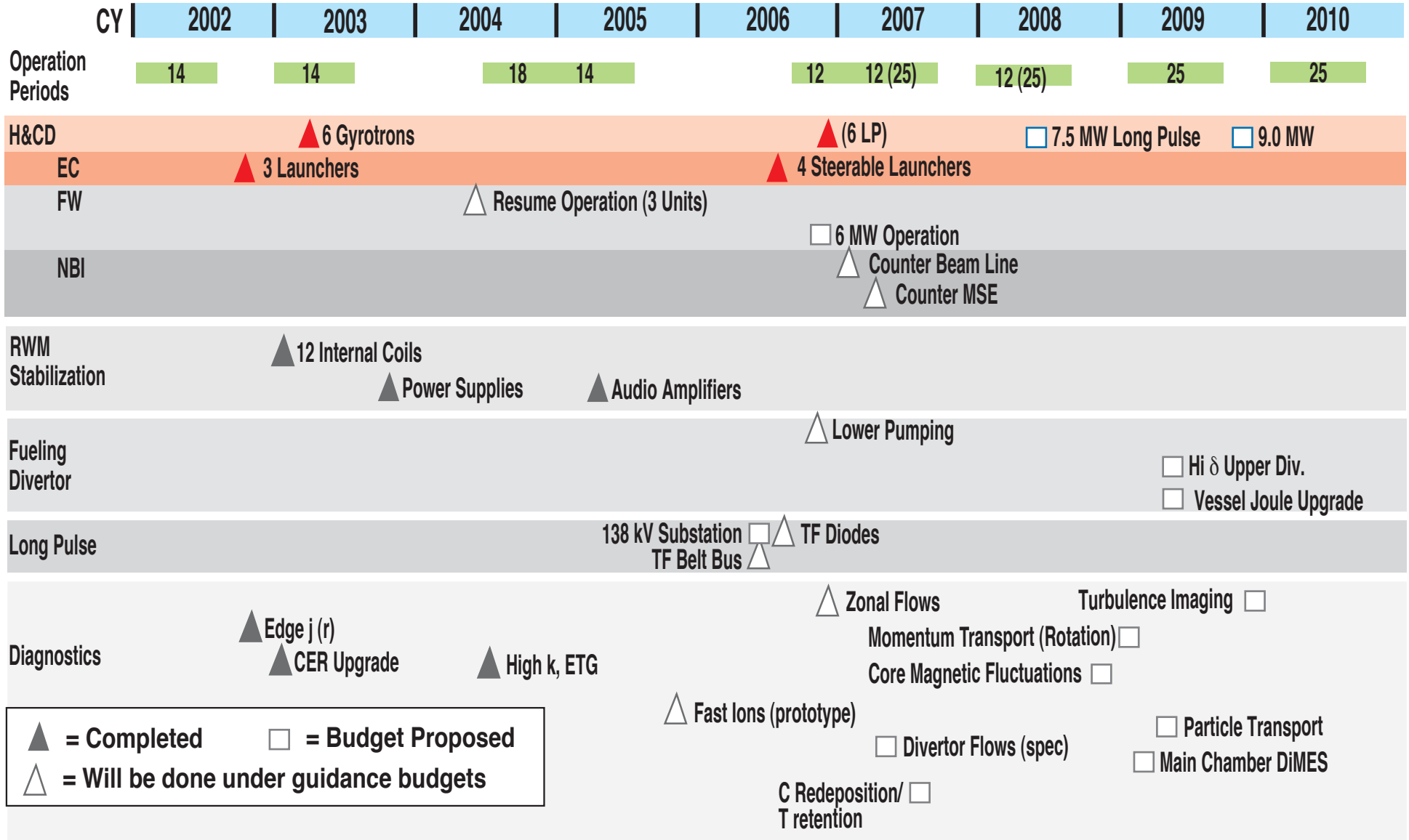
25 Weeks Operation (Incremental)

- **Milestone171: Compare measured fast ion transport by Alfven eigenmodes to theoretical models**
- **Milestone172: Investigating the role of equilibrium ExB shear and zonal flows in the creation of core transport barriers**

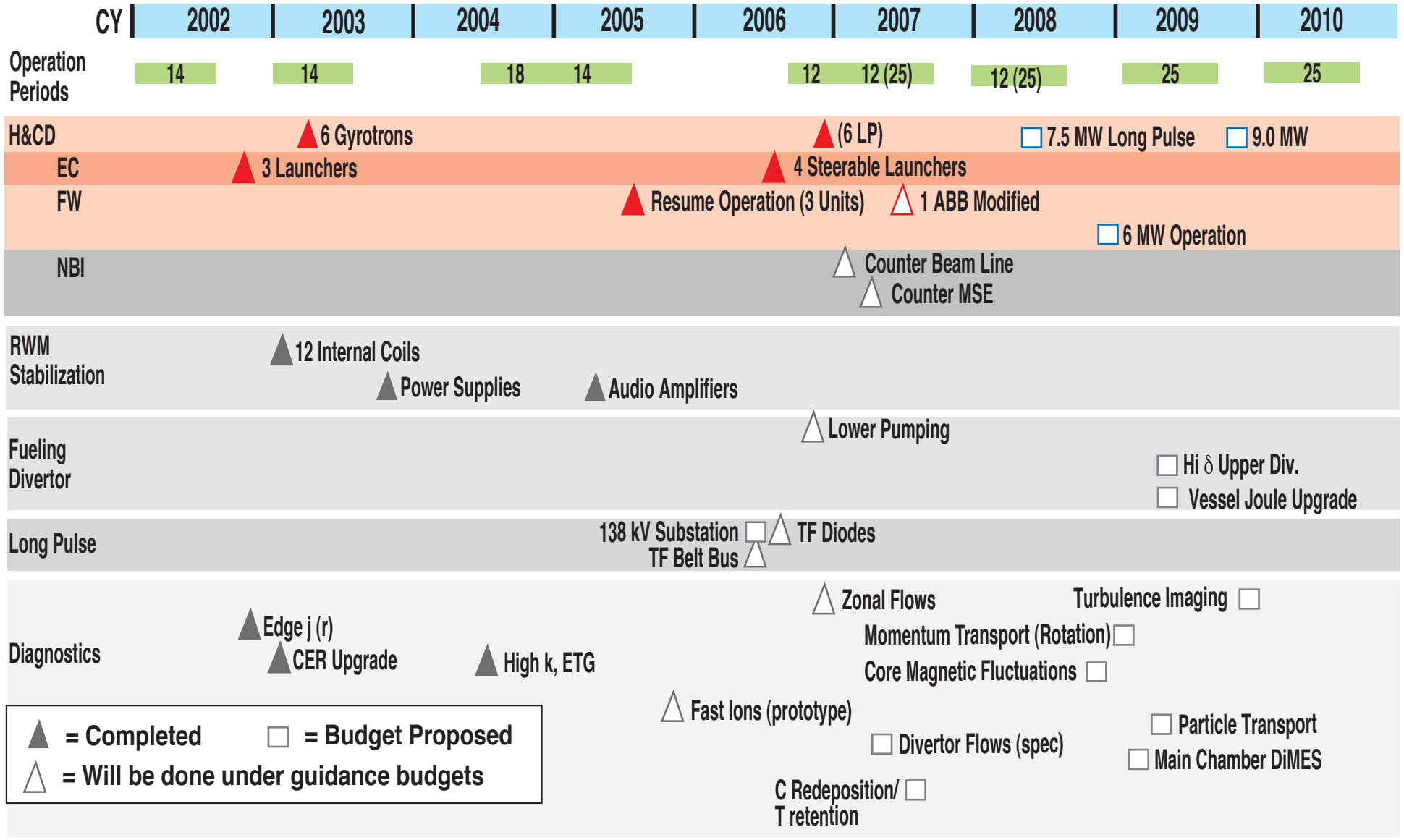
The DIII–D Facility Capabilities Plan (Last Year)



The DIII–D Facility Capabilities Plan



The DIII–D Facility Capabilities Plan



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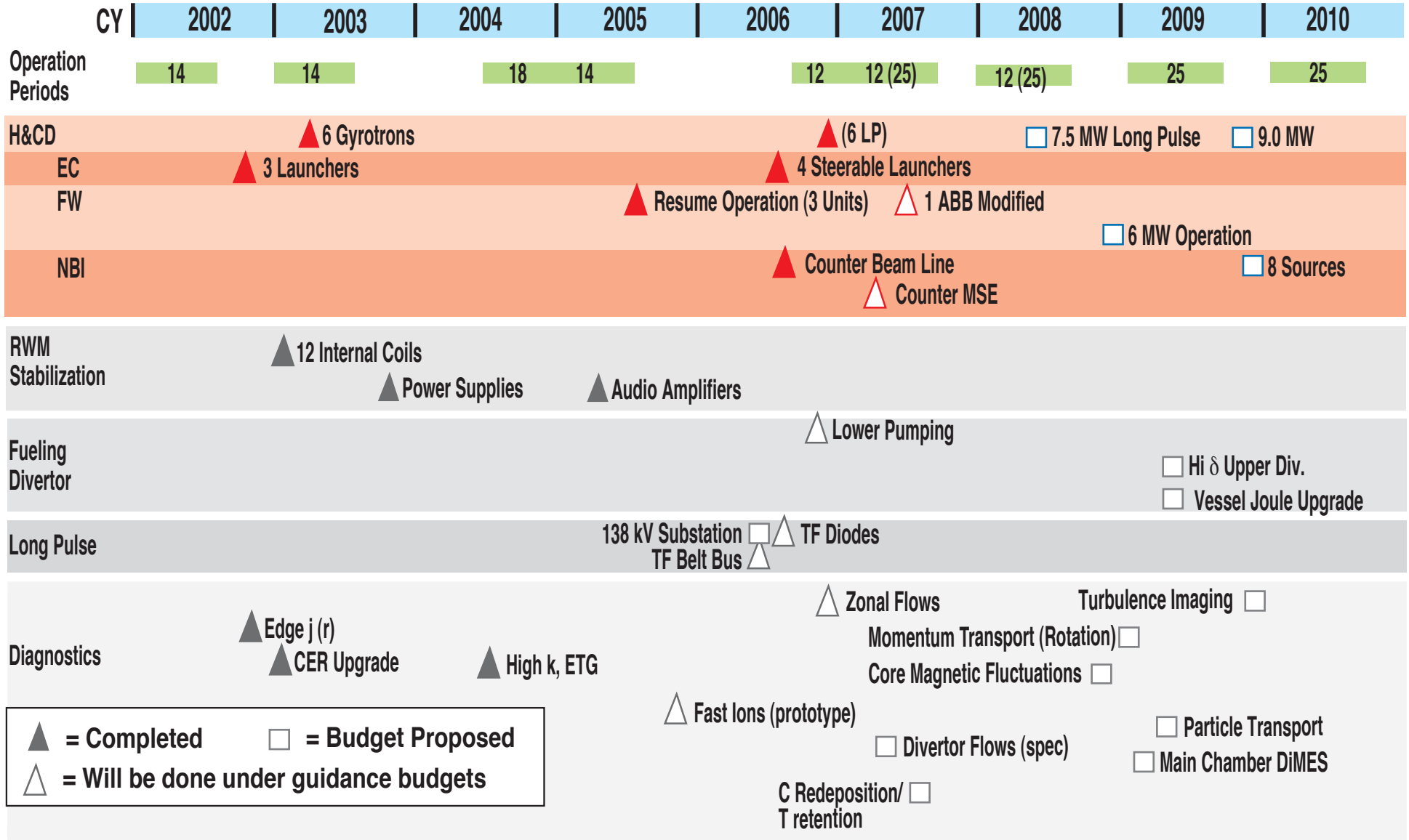

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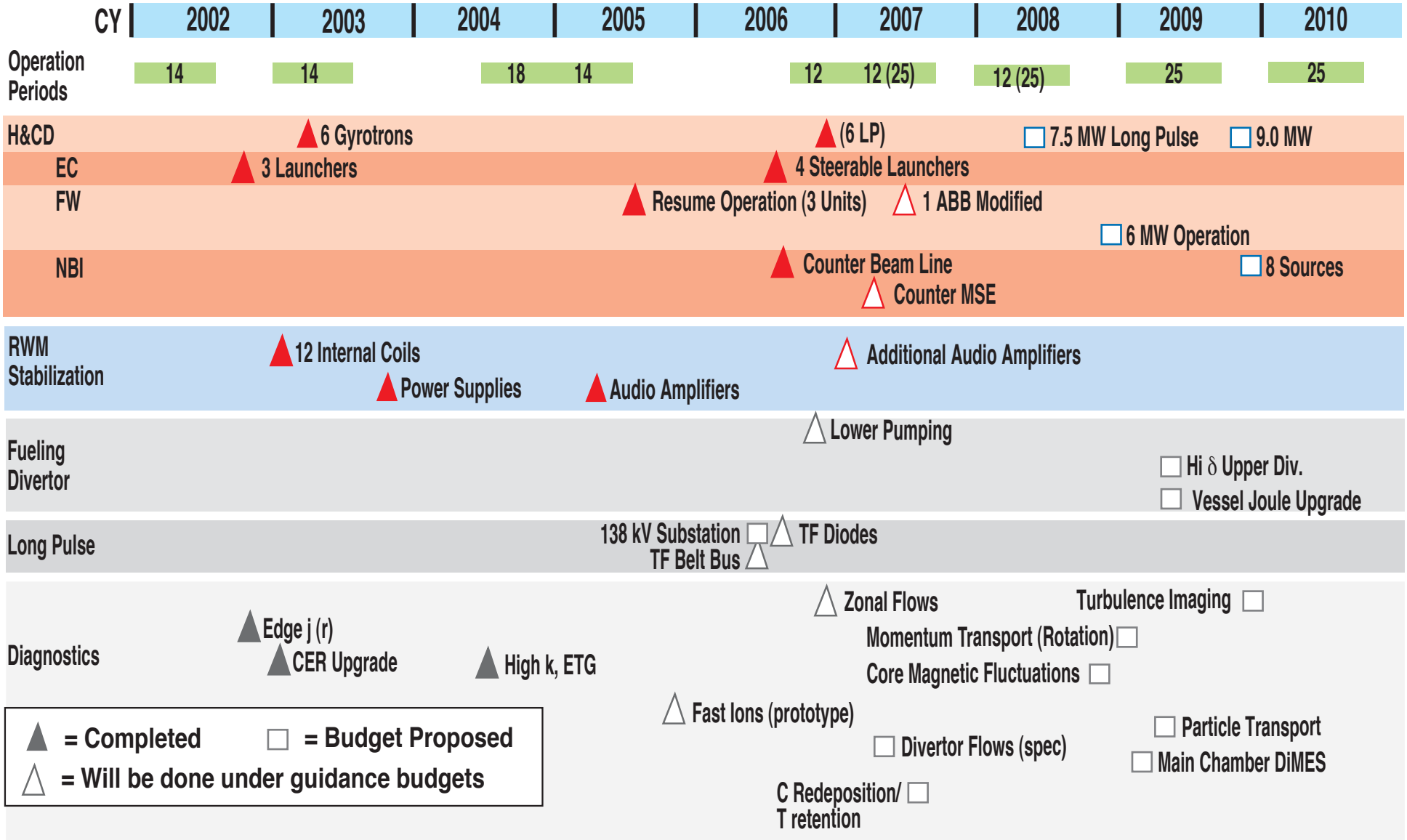

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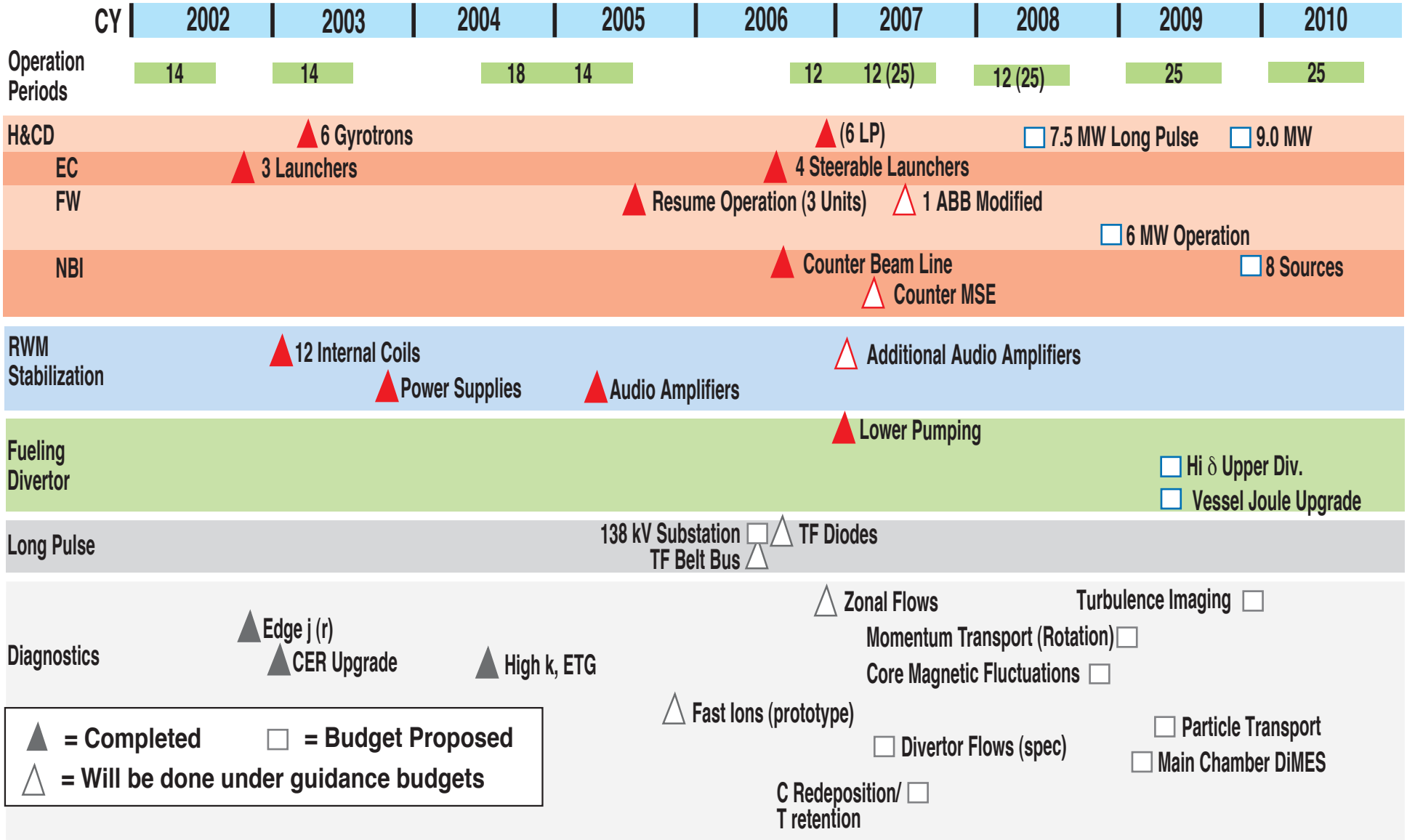

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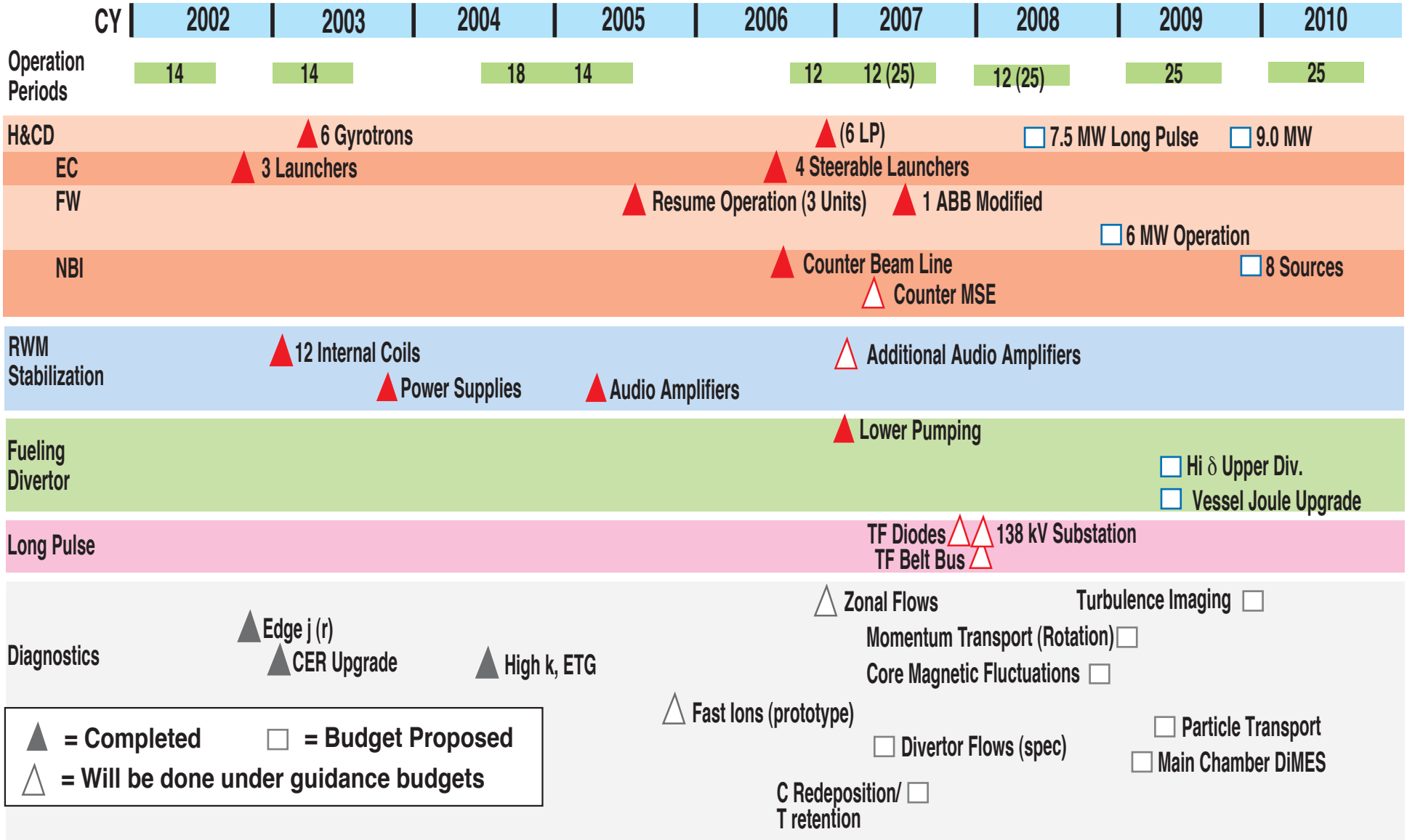

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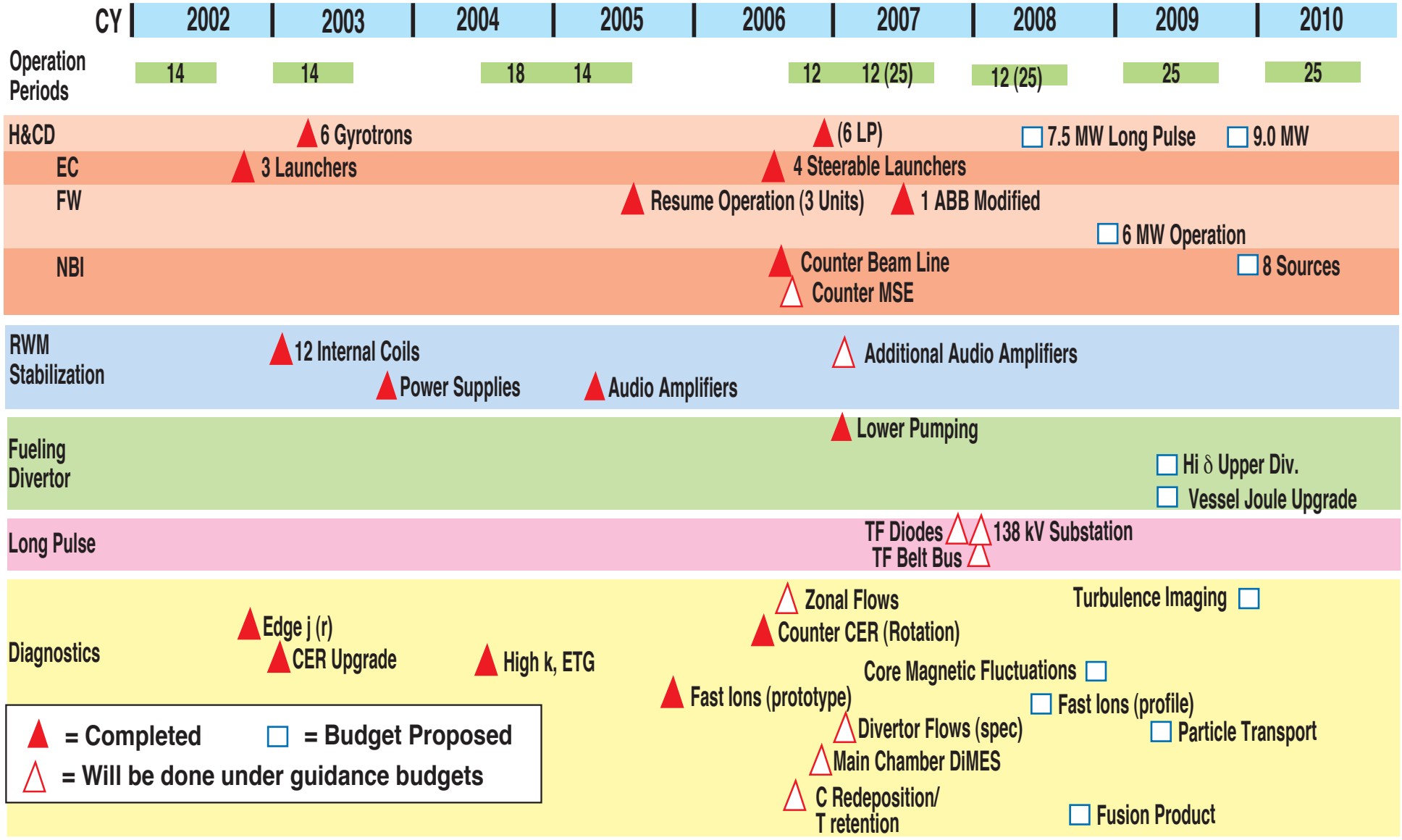

DIII–D National Fusion Program

Institutional Budget Distribution ($000) Science and Operations FY07–08

	FY07	FY07(I)	FY08	FY08(I)
DIII-D PROGRAM	**56,667**	**5,892**	**56,667**	**8,727**
SCIENCE	25,178	915	24,885	1,835
FACILITY OPERATIONS	31,489	4,977	31,782	6,891
RUN WEEKS	12	25	12	25
SCIENCE	**25,178**	**915**	**24,885**	**1,835**
GA DIII-D FUSION SCIENCE RESEARCH	**15,696**	**535**	**15,264**	**1,455**
GA	**13,702**	**535**	**13,326**	**1,383**
COLLABORATION SUPPORT FROM GA CONTRACT	**1,994**	**0**	**1,938**	**72**
UCLA	475		475	
U. MARYLAND	25		25	
U. IRVINE	100		100	
U. TORONTO	120		120	
OTHER GA COLLABORATOR SUBCONTRACTS	15		15	
GA COLLABORATOR SUPPORT	1,259		1,203	72
COLLABORATORS	**9,482**	**380**	**9,621**	**380**
PPPL	3,208		3,347	
LLNL	2,572	380	2,572	380
ORNL	1,692		1,692	
UCSD	810		810	
U. TEXAS	425		425	
COLUMBIA	325		325	
SNL	160		160	
U. WISCONSIN	160		160	
GEORGIA TECH.	130		130	
FACILITY OPERATIONS	**31,489**	**4,977**	**31,782**	**6,891**
GA	**28,873**	**4,547**	**29,305**	**6,319**
COLLABORATORS	**2,616**	**430**	**2,477**	**572**
PPPL	1,148	230	1,009	572
LLNL	593	200	593	
ORNL	875		875	

DIII–D National Fusion Program

Institutional Staffing Distribution (FTE'S) Science and Operations FY07–08

	FY07	FY07(I)	FY08	FY08(I)
DIII-D PROGRAM	**177.4**	**9.4**	**174.3**	**16.1**
SCIENCE	81.8	0.0	78.5	2.8
FACILITY OPERATIONS	95.6	9.4	95.9	13.3
RUN WEEKS	12	25	12	25
SCIENCE	**81.8**	**0.0**	**78.5**	**2.8**
GA STAFF	**43.1**	**0.0**	**40.4**	**2.8**
COLLABORATORS	**38.7**	**0.0**	**38.1**	**0.0**
GA CONTRACT SUPPORTED	**4.3**	**0.0**	**4.3**	**0.0**
UCLA	3.0		3.0	
U. MARYLAND	0.1		0.1	
U. IRVINE	0.7		0.7	
U. TORONTO	0.4		0.4	
OTHER GA COLLABORATOR SUBCONTRACTS	0.1		0.1	
DOE DIRECT SUPPORTED	**34.4**	**0.0**	**33.8**	**0.0**
PPPL	7.2		7.6	
LLNL	9.5		9.3	
ORNL	4.7		4.7	
UCSD	4.9		4.5	
U. TEXAS	2.0		2.0	
COLUMBIA	2.7		2.5	
SNL	1.1		1.1	
U. WISCONSIN	1.7		1.5	
GEORGIA TECH	0.6		0.6	
FACILITY OPERATIONS	**95.6**	**9.4**	**95.9**	**13.3**
GA	**86.7**	**9.0**	**86.7**	**12.4**
COLLABORATORS	**8.9**	**0.4**	**9.2**	**0.9**
PPPL	2.3	0.4	2.1	0.9
LLNL	2.0		2.5	
ORNL	4.6		4.6	

Impact of a 10% Budget Cut in the DIII–D National Fusion Program

FY07 the following actions would be taken in the order listed

1. Delay connection of new substation transformers from China to DIII–D
2. Reduce procurements of maintenance items and diagnostics improvements
3. Reduce run time from 12 to 6 weeks
4. Reduce staff throughout the DIII–D program by 14 FTE = 8 %

FY08 the following actions would be taken in the order listed

1. Delay connection of new substation transformers from China to DIII–D
2. Reduce procurements of maintenance items and diagnostics improvements
3. Reduce run time from 12 to 6 weeks
4. Reduce staff throughout the DIII–D program by 13 FTE = 7.5 %

Summary of DIII–D Program Incremental Budget Requests

	FY07		FY08	
Retain Scientific Staff	$50K		$970K	
	LLNL	$50K	GA	$920K
			LLNL	$50K
Increased Operating Time	$3,048K	(To 25 Weeks)	$3,097K	(To 25 Weeks)
	GA	$3,048K	GA	$3,097K
Add Students / Postdocs	$610K		$610K	
	GA (7)	$280K	GA (7)	$280K
	LLNL (2)	$330K	LLNL (2)	$330K
Power Systems	$300K		$300K	
Serial Highway to Ethernet	GA	$300K	GA	$300K
Neutral Beam Refurbishments	$1,188K		$338K	
Power Supply Local Control Stations	GA	$1,188K		
Replace Damaged Pole Shields			GA	$338K
ECH	$138K		$2,205K	
ECH Transmission Line			GA	$1,035K
ECH Socket			GA	$1,170K
Conversion to 2 Fast Steerable Launchers	PPPL	$138K		
Diagnostic Refurbishments / Upgrades	$558K		$635K	
Fast Ion Profile	GA	$170K		
Data Acquistion Upgrades	GA	$96K	GA	$120K
Thomson Refurbishments			GA	$455K
Fusion Products Diagnostic			GA	$60K
Fast IRTV to Measure ELMS	LLNL	$150K		
2nd Divertor IRTV	LLNL	$50K		
Dual ECE/Reflectometer Imaging System	PPPL	$92K		
Fast Wave			$572K	
Convert 2nd ABB System to EIMAC Tetrode			PPPL	$572K
TOTALS	$5,892K		$8,727K	

The DIII–D Program Will Carry Out Important Scientific Research in Support of ITER

- Ensure the success of ITER by providing solutions to key ITER issues
- Enrich the ITER physics program through development and characterization of advanced scenarios
- Develop the physics basis for high performance, steady-state operation for ITER and beyond