Tentative Time Schedule for Cavities and Modules at DESY in 2004

Situation in 2004

- TTFII conditioning start is scheduled for Mai
  (need of spare modules in case of trouble)
- 30 new cavities ordered delivery will start beginning of Mai
- Ep at DESY commissioned but statistic is low
  (Limited knowledge on EP multicells)
- XFEL needs study of new treatment
  (no 1400 C titanisation needed due to EP treatment??)
- Limited money and limited number of personal
- EP process more time consuming than BCP
  Removal rate 1/2 of BCP
  handling installation BCP ➔2h / EP ➔ 16h
  dismount BCP ➔1.5h EP ➔5.3h

We want

To study Ep processes on as much cavities as possible
Make as many chechia test on high gradient cavities as possible
Want to have Module 6 (high gradient) as soon as possible
Want to have spared modules for TTF II as soon as possible
Want to have reproducibility test of EP process and assembly
Want to know how Z cavity production looks as soon as possible
We need to study processes for X fel and high gradient

Some information and reminders

Spare modules for position

ACC 1- ACC 3 need “old “ type HE 2K feed line (on top)
Vacuum tank large diameter (Type 1+2)

ACC4-ACC 6 need “new” type HE 2K feed line on side
Vacuum tank smaller diameter (Type 3).

We have

- O 8 Cavities with tank of “old” type but
  Niobium lip sealing technique (earliest start of repair May 04)
- O 1 cryo vessel and cold mass of type 2 (with superstructure installed)
- O No He tank of old type on stock
- O 10 cavities for re treatment by EP on stock (7 AC of best serious)
- 0 2 cavities with >= 35 MV are at DESY

Actual situation of Cavities

at DESY that have or may have the potential for high gradients

AC 70 40 MV/m
Ac 73 35 MV/m reserved for test at Fermi lab
AC 71
AC 74
AC 75
AC 76
AC 78
AC 80 (no RF test)
AC 81 (no RF test)
Z 82ff to be delivered from may 04 on in batches of 3 per month
S35
D39
Z49

Assumptions for 2004

To make some time schedule gymnastics

- High gradient and no 1400 C heating are the same direction (EP)
- AC 70 (40MV/m) to be tested in Chechia as soon as possible
- Preparation for Chechia test´s of EP cavities needs only HPR
- We assume no urgent need of spare module for Pos acc 1-3
  In may 04 we should know the answer
  Then we may have to discuss the priorities and schedule again
- We see chances to run TTF 2 even minor problems on modules

o New cavities (Zanon) will arrive end of April
o first 10 new Z cavities get Inside / outside etch and 800 C heat treatment to get statistic to define XFEL preparation technique

Infrastructure, man power, processes

- o New cavities need surface cleaning (by BCP) before 800 C treatment
- o We removed more than 180 –200µm before cavities showed 35 MV/m
- o Installation of cavity to bench takes about 2 working day´s
- o Successful sequences on EP cavity
  - EP polishing
  - Ultra sound / Car wash cleaning
  - Ultrapure rins (18 Mohm cm)
  - 1 High pressure rinse
  - assembly of flanges/ Antennas and leaktest
  - 6 times High pressure rinses (each 2,5 h in total)
  - assembly of antenna
- o After any treatment cavities should not be exposed to air
  - for more than 12 h (field emission onset level is reduced)
- o EP and BCP can not run in parallel !!
- o Switch from BCP to EP infrastructure need´s about half a day

Time schedule for Module and Cavity test in 2004

Basing on engaged discussions at DESY

Scenario 1
fastest chance to have
a high gradient module and a spare module type 2

Scenario 2
Fastest chance to have
2 modules (Type 2 and 3) with EP cavities
(perhaps both with high gradient ?? !!)

Input for time schedule

-> only 50 % of EP treated cavities reach 35 MV/m
(Very limited statistic !!!)
Contingency of 50 % of the optimum process added

-> “old “ cavities after repair need vertical test
and additional treatment
Contingency of 50 % of the optimum process added

-> Ep treatment of Cavity Ac 71-81 can start now

-> Cleanroom reserved for EP activities and Chechia preparation only

-> Solution for Piezo tuner will be available until November 04

➔ CHECHIA as many as possible on high gradient module cavities

Scenario 1

Module 6

2 cavities are on hand Ac 70 /Ac 73

7 AC cavities to be tested as fast as possible ➔3 may show 35

+ 3 have to be redone➔ 1 shows 35

new cavity production

4 cavities treated and tested ➔ 2 show 35

+ 2 retested ➔ 1 shows 35

SUMM 2+3+1+2+1= 9

➔Until mid of October 04 there is a chance
to have 8+x cavities qualified for the high gradient module

Repair of Module 2 cavities

8 (known) cavities treated and tested + 6 retests

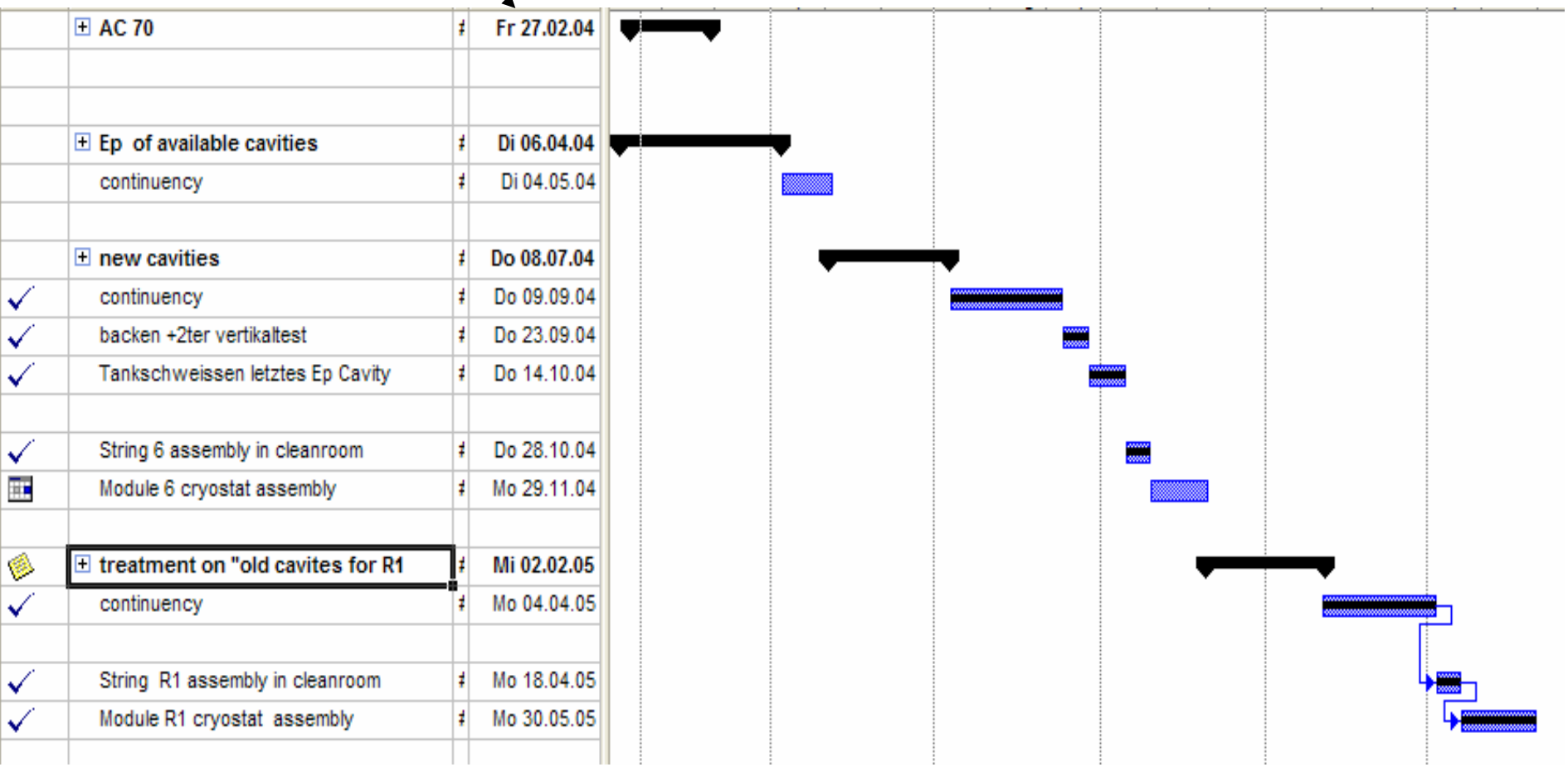
8 out of 14 tests show gradients above 20 MV/m

➔Until end of march 8 cavities qualified for spare module

Spare module 1 ready for installation in May 05

Time schedule 04-05

Earliest time to finish



	AC 70	≠	Fr 27.02.04
	Ep of available cavities	≠	Di 06.04.04
	continuency	≠	Di 04.05.04
	new cavities	≠	Do 08.07.04
✓	continuency	≠	Do 09.09.04
✓	backen +2ter vertikaltest	≠	Do 23.09.04
✓	Tankschweissen letztes Ep Cavity	≠	Do 14.10.04
✓	String 6 assembly in cleanroom	≠	Do 28.10.04
	Module 6 cryostat assembly	≠	Mo 29.11.04
	treatment on "old cavites for R1	≠	Mi 02.02.05
✓	continuency	≠	Mo 04.04.05
✓	String R1 assembly in cleanroom	≠	Mo 18.04.05
✓	Module R1 cryostat assembly	≠	Mo 30.05.05

details

Test as many Ep cavities as possible

Module 6

2 cavities are on hand Ac 70 /Ac 73

7 AC cavities to be tested as fast as possible ➔3 may show 35

+ 3 have to be redone➔ 1 shows 35

new cavity production

4 cavities treated and tested ➔ 2 show 35

+ 2 retested ➔ 1 shows 35

SUMM 2+3+1+2+1= 9

➔Finished until mid of October 04 there is a chance

Take the next new cavities and continue ep for the second spare module

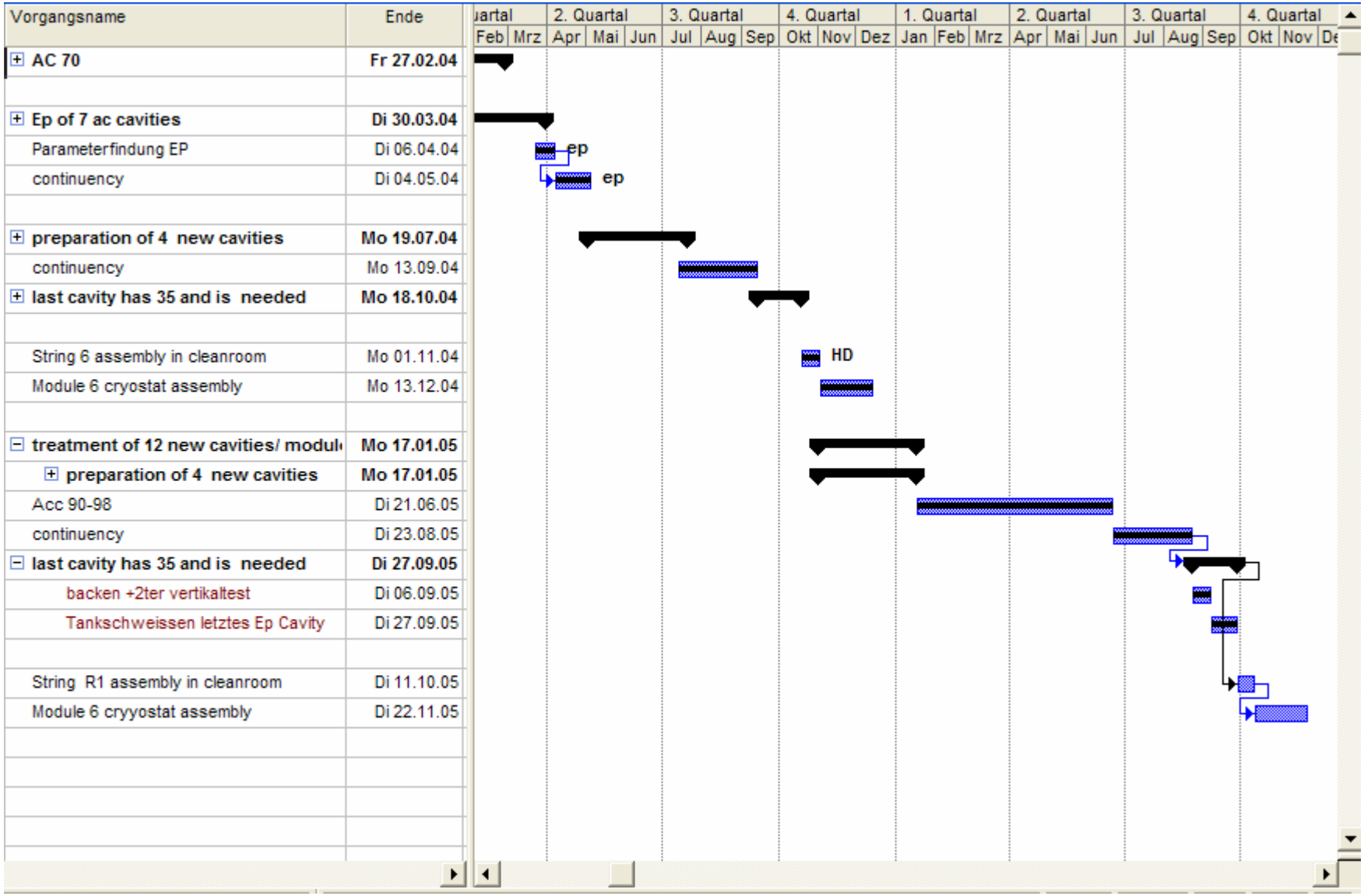
12 cavity full treatments and test ➔ 6 show 35 MV/m

+ 6 2nd preparation and test ➔ 3 show 35 MV/m

earliest to be finished until September

means spar module for installation not before end of 2005

Scenario 2



Details

Conclusion

For ac 71 –81

preparation of one cavity per ONE week / ready for testing seems to be ok

For Z 82 ff

preparation of one cavity per TWO week ready for testing seems to be ok

(no contingency for errors included)

HIGH Gradient MODULE can not be ready for installation before - Dec 04 –

if the 50 % success rate is some how realistic !!

Number of Chechia test is limited and adopted to the unknown number of high gradient

all is very strongly depending on the success rate

Spare Module for Position Acc 1-3 can not be ready for installation before

- May 05 –

timing for cavity treatment is based on our BCP experiences and use of the cavities of old module 2