Exp No. S426 Primary Beam: 66Kr Date 24.03.2014

MBS/file location /d/nisingo2/mar_A0_14/data	**File (first)** 66Cu_isomer_0998.lmd **File (last)** 66Cu_isomer_1000.lmd	**Start** ≈ 23:40 **Stop** 00:49 (25.03.2014)
Narval/file location run_0046 / run_0047	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) See 66 Cu ☒ Calibration run ☐ Production run

COMMENTS: identify isomer decay lines of 66 Cu to verify FRS setting

shift-in-charge

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]
- Intensity-SEETRAM

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER
TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER
TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left):
- TS3DS2HR (right):

S2 SLITS
☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left):
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left):
- HFSDS3H (right):
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.85215
- TS3MU2: 0.79634
- TS4MU1: 0.63954
- HFSMU1: 0.63895

FRS-RATES
(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☒ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☒ SCI41
- ☐ Other:

PreSPEC-Rates
(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. Primary Beam: Date

MBS/file location /d/nsing02/mar_AG_14/data	**File (first)** 64Co_setting__1001.lmd **File (last)**	**Start** **Stop** 02:22
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☒ Calibration run ☐ Production run

COMMENTS:

shift-in-charge

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]
- Intensity-SEETRAM

PROD. TARGET

TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER

TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER

TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER

HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS

☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS

☐ beam plug out
- TS3DS2HL (left):
- TS3DS2HR (right):

S2 SLITS

☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left):
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left):
- HFSDS3H (right):
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS

Field values from Hall probes:
- TS3MU1:
- TS3MU2:
- TS4MU1:
- HFSMU1:

FRS-RATES

(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates

(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / PIs. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. | Primary Beam: | Date 25.03.2014

MBS/file location: /d/rising02/mar_A6_14/data
File (first) 64Fe_setting_1002.lmd
File (last)
Start 02:50
Stop 04:05

Narval/file location:
File (first)
File (last)
Start
Stop

Merged(Narval+MBS)/file location:
File (first)
File (last)
Start
Stop

PURPOSE OF MEASUREMENT: (Centered Isotope) run with the 64 Fe setting ☒ Calibration run ☐ Production run

COMMENTS: Changing rate and slits during data taking

shift-in-charge final S2-Slits −40 +20

FRS/BEAMLINE elements
- ☒ SEETRAM
- ☐ SCI-01
- ☒ FRS-TA0
- ☒ S1-degrader
- ☒ S2-degrader
- ☒ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☒ TA1
- ☒ TaDSSD

SPILL
spill length: 4 sec
period: 6 sec

FRS setting No.: S426_25

PRIMARY BEAM
Element: 86Kr
SIS energy [MeV/u]: 700
Intensity-SEETRAM: $3 \cdot 10^8$

PROD. TARGET
TS1ET5HS, TS1ET5VS:
number: 35
element: Be
thickness: 2.5 g/cm²

S1 DEGRADER
TS3ED2...
Thickness: 2 g/cm²
Wedge used:
O2 (Wedge Oben):
V1 (Wedge Unten):

S2 DEGRADER
TS3ED7...
Thickness: 5 g/cm²
L (Ladder):
D (Disk):
VO (Wedge Oben):
VU (Wedge Unten):

S4 DEGRADER
HFSED3...
Thickness:
O (Wedge Oben):
U (Wedge Unten):

S0 SLITS open
☐ beam stop out
TS2DS3HL (left):
TS2DS3HR (right):
TS2DS3VO (top):
TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
TS3DS2HL (left): −60
TS3DS2HR (right): +60

S2 SLITS open
☐ beam plug out
TS4DS1HL (left):
TS4DS1HR (right):
TS4DS1VO (left):
TS4DS1VU (right):

S3 SLITS open
TS4DS3HL (left):
TS4DS3HR (right):

S4 SLITS
HFSDS3H (left): −35
HFSDS3H (right): +35
Pb Brick (top):
Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
TS3MU1: 0.92 665
TS3MU2: 0.84164
TS4MU1: 0.73834
HFSMU1: 0.73785

FRS-RATES (counts/spill)
10 kHrtz : 60 260
10 kHrtz veto dT : 60 000
SC21L: 250k
SC21R: 250k
SC41L: 180
SC41R: 180

TA1
Element : Au
Thickness : 2 g/cm²
Position: center

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☒ AgataCal(3)/.24
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☒ p+HEC+Lyc(8)/.....
- ☒ p+Agata+Lyc(9)/...
- ☒ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☒ SCI41
- ☐ Other:

PreSPEC-Rates (Validated/Rejected)
AGATA :
FRS :
Ta-ToF-LYCCA :
HECTOR :

LYCCA / PIs. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
LN2 Last Filling : 01:45
Tank1 Vol. (%) : 55 %
Tank2 Vol. (%) : 55 %

Exp No. | Primary Beam: | Date 25.3.2019

MBS/file location	**File (first)** 66Cu settings 2 **File (last)** 1003	**Start** 4:35 **Stop** 4:42
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS:

shift-in-charge

FRS/BEAMLINE elements
- ☒ SEETRAM
- ☐ SCI-01
- ☒ FRS-TA0
- ☒ S1-degrader
- ☒ S2-degrader
- ☒ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☒ TA1
- ☒ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element: 86 Kr
- SIS energy [MeV/u]: 700
- Intensity-SEETRAM

PROD. TARGET

TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER

TS3ED2...
- Thickness: 2 g/cm²
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER

TS3ED7...
- Thickness: 5g/cm²
- L (Ladder):
- D (Disk): 60.9 grad
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER

HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS

☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS

☐ beam plug out
- TS3DS2HL (left): -90
- TS3DS2HR (right): 90

S2 SLITS

☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left):
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left): -35
- HFSDS3H (right): 35
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS

Field values from Hall probes:
- TS3MU1: 0.35195
- TS3MU2: 0.79694
- TS4MU1: 0.63954
- HFSMU1: 0.63895

FRS-RATES

(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L: 27.000
- SC21R: 23.000
- SC41L: 392
- SC41R: 307

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates

(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. Primary Beam: Date

MBS/file location	**File (first)** 66Cu_setting3_1004.lmd **File (last)**	**Start** 4:41 **Stop** 4:53
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS:

shift-in-charge

FRS/BEAMLINE elements

- ☑ SEETRAM
- ☐ SCI-01
- ☑ FRS-TA0
- ☑ S1-degrader
- ☒ S2-degrader
- ☑ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☑ TA1
- ☑ TaDSSD

SPILL

spill length:

period:

FRS setting No.

PRIMARY BEAM

Element: 86Kr

SIS energy [MeV/u]: 720

Intensity-SEETRAM

PROD. TARGET

TS1ET5HS, TS1ET5VS:

number:

element:

thickness:

S1 DEGRADER

TS3ED2...

Thickness: 2g/cm²

Wedge used:

O2 (Wedge Oben):

V1 (Wedge Unten):

S2 DEGRADER

TS3ED7...

Thickness: 5g/cm²

L (Ladder):

D (Disk):

VO (Wedge Oben):

VU (Wedge Unten):

S4 DEGRADER

HFSED3...

Thickness:

O (Wedge Oben):

U (Wedge Unten):

S0 SLITS

☐ beam stop out

TS2DS3HL (left):

TS2DS3HR (right):

TS2DS3VO (top):

TS2DS3VU (bottom):

S1 SLITS

☐ beam plug out

TS3DS2HL (left): -40

TS3DS2HR (right): +40

S2 SLITS

☐ beam plug out

TS4DS1HL (left):

TS4DS1HR (right):

TS4DS1VO (left):

TS4DS1VU (right):

S3 SLITS

TS4DS3HL (left):

TS4DS3HR (right):

S4 SLITS

HFSDS3H (left):

HFSDS3H (right):

Pb Brick (top):

Pb Brick (bottom):

MAGNETS

Field values from Hall probes:

TS3MU1: 0.85195

TS3MU2: 0.79634

TS4MU1: 0.63954

HFSMU1: 0.63895

FRS-RATES

(counts/spill)

10 kHrtz :

10 kHrtz veto dT :

SC21L: 23000

SC21R: 22000 ~~23000~~

SC41L: 9000

SC41R: 9000

TA1

Element :

Thickness :

Position:

PreSPEC-Trig/red.

- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER

- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates

(Validated/Rejected)

AGATA :

FRS :

Ta-ToF-LYCCA :

HECTOR :

LYCCA / Pls. check

- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2

LN2 Last Filling :

Tank1 Vol. (%) :

Tank2 Vol. (%) :

Exp No. Primary Beam: Date

MBS/file location	**File (first)** 1005 **File (last)**	**Start** 5:02 **Stop** 5:05
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS: 66Cu settings (no S1 deg) **shift-in-charge**

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]
- Intensity-SEETRAM

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER
TS3ED2...
- Thickness: —
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER
TS3ED7...
- Thickness: 5g
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left): −25
- TS3DS2HR (right): +25

S2 SLITS
☐ beam plug out
- TS4DS1HL (left): —
- TS4DS1HR (right): —
- TS4DS1VO (left): —
- TS4DS1VU (right): —

S3 SLITS
- TS4DS3HL (left): —
- TS4DS3HR (right): —

S4 SLITS
- HFSDS3H (left): —
- HFSDS3H (right): —
- Pb Brick (top): —
- Pb Brick (bottom): —

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.85185
- TS3MU2: 0.84164
- TS4MU1: 0.69524
- HFSMU1: 0.69465

FRS-RATES
(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L: 22000
- SC21R: /
- SC41L: 1500
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates
(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. Primary Beam: Date

MBS/file location	**File (first)** 1006 **File (last)**	**Start** 5:41 **Stop** 5:46
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS: **shift-in-charge**

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]:
- Intensity-SEETRAM

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER
TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER
TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left): -35.1
- TS3DS2HR (right): 35.1

S2 SLITS
☐ beam plug out
- TS4DS1HL (left): OPEN
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left): OPEN
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left):
- HFSDS3H (right): OPEN
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.85045
- TS3MU2: 0.73484
- TS4MU1: 0.63754
- HFSMU1: 0.63705

FRS-RATES (counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates (Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / PIs. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. Primary Beam: Date 25/3/2014

MBS/file location	**File (first)** 1007 **File (last)**	**Start** 5:50 **Stop** 5:51
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS: **shift-in-charge**

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]
- Intensity-SEETRAM

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER
TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER
TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left):
- TS3DS2HR (right):

S2 SLITS
☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left):
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left):
- HFSDS3H (right):
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.85055
- TS3MU2: 0.79334
- TS4MU1: 0.63754
- HFSMU1: 0.63705

FRS-RATES
(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates
(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. | Primary Beam: | Date 25/03/2014

MBS/file location	**File (first)** 1008 **File (last)**	**Start** 5:56 **Stop** 6:06
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS:

shift-in-charge

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]
- Intensity-SEETRAM

PROD. TARGET

TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER

TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER

TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER

HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS

☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS

☐ beam plug out
- TS3DS2HL (left):
- TS3DS2HR (right):

S2 SLITS

☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left):
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left):
- HFSDS3H (right):
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS

Field values from Hall probes:
- TS3MU1: 0.35055
- TS3MU2: 0.73264
- TS4MU1: 0.63544
- HFSMU1: 0.63495

FRS-RATES

(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates

(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No: Primary Beam: Date 25/03/2014

MBS/file location	**File (first)** 1009 **File (last)** 64Fe_setting	**Start** 6:16 **Stop** 6:26
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS:

shift-in-charge

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]
- Intensity-SEETRAM

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER
TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER
TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right): OPEN
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left): -10
- TS3DS2HR (right): +10

S2 SLITS
☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right): OPEN
- TS4DS1VO (left): OPEN
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left):
- TS4DS3HR (right): OPEN

S4 SLITS
- HFSDS3H (left):
- HFSDS3H (right): OPEN
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.92505
- TS3MU2: 0.87114
- TS4MU1: 0.73584
- HFSMU1: 0.73795

FRS-RATES
(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates
(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

EXP NO. Primary Beam: Date 25/03/2014

MBS/file location	**File (first)** 1010 **File (last)**	**Start** 6:30 **Stop** 6:35
Narval/file location	**File (first)** **File (last)** 84Fe_setting Cent	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS:

shift-in-charge

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]
- Intensity-SEETRAM

PROD. TARGET

TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER

TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER

TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER

HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS

☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

OPEN

S1 SLITS

☐ beam plug out
- TS3DS2HL (left): -40
- TS3DS2HR (right): +40

S2 SLITS

☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

OPEN

S3 SLITS
- TS4DS3HL (left):
- TS4DS3HR (right):

OPEN

S4 SLITS
- HFSDS3H (left):
- HFSDS3H (right):
- Pb Brick (top):
- Pb Brick (bottom):

OPEN

MAGNETS

Field values from Hall probes:
- TS3MU1: 0.32525
- TS3MU2: 0.37114
- TS4MU1: 0.73664
- HFSMU1: 0.73605

FRS-RATES

(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates

(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. | Primary Beam: [illegible] | Date 25/03/2014

MBS/file location	**File (first)** 1011 **File (last)**	**Start** 6:35 **Stop** 6:40
Narval/file location AR 49	**File (first)** 64Fe-production **File (last)**	**Start** **Stop** 6:39
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS: **shift-in-charge**

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]
- Intensity-SEETRAM

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER
TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER
TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left): OPEN
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left): -40
- TS3DS2HR (right): +40

S2 SLITS
☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right): OPEN
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left): OPEN
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left): -35
- HFSDS3H (right): +35
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.32515
- TS3MU2: 0.87114
- TS4MU1: 0.73664
- HFSMU1: 0.73605

FRS-RATES
(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates
(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. | Primary Beam: | Date 25/3/2019

MBS/file location	**File (first)** 1012 **File (last)**	**Start** 6:45 **Stop** 8:30
Narval/file location AR43	**File (first)** **File (last)** 64Fe_ar43_cocktail	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☒ Production run

COMMENTS: **shift-in-charge**

FRS/BEAMLINE elements
- ☒ SEETRAM
- ☐ SCI-01
- ☒ FRS-TA0
- ☒ S1-degrader
- ☒ S2-degrader
- ☒ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☒ TA1
- ☒ TaDSSD

SPILL
- spill length: 95
- period: 65

FRS setting No.: 5426_28

PRIMARY BEAM
- Element: ^{36}Kr
- SIS energy [MeV/u]: 700
- Intensity-SEETRAM: 1.3×10^8

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number: #35
- element: Be
- thickness: 2.5

S1 DEGRADER
TS3ED2...
- Thickness: 2g/cm²
- Wedge used: 1
- O2 (Wedge Oben): -31.2
- V1 (Wedge Unten): -252.7

S2 DEGRADER
TS3ED7...
- Thickness: 5g/cm²
- L (Ladder):
- D (Disk): 60.6
- VO (Wedge Oben): -298.0
- VU (Wedge Unten): -298.0

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left): OPEN
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left): -40
- TS3DS2HR (right): +40

S2 SLITS
☐ beam plug out
- TS4DS1HL (left): OPEN
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left): OPEN
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left): +35
- HFSDS3H (right): +35
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.92505
- TS3MU2: 0.87114
- TS4MU1: 0.73664
- HFSMU1: 0.73605

FRS-RATES
(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L: 260.000
- SC21R: 279.000
- SC41L: 5540
- SC41R: 5480

TA1
- Element : Cu
- Thickness : 2g/cm²
- Position: central

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☒ AgataCal(3)/...9.
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☒ p+HEC+Lyc(8)/...
- ☒ p+Agata+Lyc(9)/...
- ☒ Part-SC41(10)/...
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☒ SCI41
- ☐ Other:

PreSPEC-Rates
(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling : 150
- Tank1 Vol. (%) : 56
- Tank2 Vol. (%) : 55

Exp No. | Primary Beam: | Date 25/3/2014

MBS/file location	**File (first)** 1013 **File (last)**	**Start** 10:05 **Stop**
Narval/file location	**File (first)** **File (last)** 64Fe_ar48_coulex	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

COMMENTS: **shift-in-charge**

FRS/BEAMLINE elements
- ☒ SEETRAM
- ☐ SCI-01
- ☒ FRS-TA0
- ☒ S1-degrader
- ☒ S2-degrader
- ☒ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☒ TA1
- ☒ TaDSSD

SPILL
- spill length: 20
- period:

FRS setting No. S426-28

PRIMARY BEAM
- Element: 86 Kr
- SIS energy [MeV/u]: 700
- Intensity-SEETRAM: 2x10^6

PROD. TARGET TS1ET5HS, TS1ET5VS:
- number:
- element: Be
- thickness: 2.5

S1 DEGRADER TS3ED2...
- Thickness: 2g/cm²
- Wedge used: 1
- O2 (Wedge Oben): -31.2
- V1 (Wedge Unten): -252.7

S2 DEGRADER TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS ☐ beam stop out
- TS2DS3HL (left): OPEN
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS ☐ beam plug out
- TS3DS2HL (left): -40
- TS3DS2HR (right): +40

S2 SLITS ☐ beam plug out
- TS4DS1HL (left): OPEN
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left): OPEN
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left): -35
- HFSDS3H (right): +35
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS Field values from Hall probes:
- TS3MU1: 0.82515
- TS3MU2: 0.87114
- TS4MU1: 0.73664
- HFSMU1: 0.73605

FRS-RATES (counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element : Au
- Thickness : 2g/cm²
- Position: central

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/....
- ☒ AgataCal(3)/...4
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☒ p+HEC+Lyc(8)/..0
- ☒ p+Agata+Lyc(9)/..0
- ☒ Part-SC41(10)/..8
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☒ SCI41
- ☐ Other:

PreSPEC-Rates (Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling : 7:40
- Tank1 Vol. (%) : 100
- Tank2 Vol. (%) : 95

Check list

Name: Damien Palet.

Time: 13H24 the 23th Mars 2016.

Agata

- Run number: 51
- Agava requested: 202
- Agava validated: 168.
- Screenshot trigger rate + spectrum of time coincidence : ✓
- Check in Go4 that all Agata-TDC spectra are there: (21 spectra : OK).
- Check that the last .cdat files has been written less then 10 minutes ago for all the crystals: ✓
- Copy and paste in a text file the GTS rate: ✓
- Check Spectra of all crystals: ✓
- Check at the sum spectra "Global level":
  - number of counts in 511 keV:
  - number of counts in 1460 keV K:

  } No global.
- Crystals with problems: 5A is error.
  7C in back pressure ⇒ Stop.
  0B beam problem.
  7B off.

General

- lmd file nr: 1015
- Beam intensity:
- Scaler sc at S4: $4{,}0e^{4}$
- Scaler sc at S2: $1{,}9e^{6}$
- Check in Go4 all the spectra of the list* : 1
- Check in Go4 the hit pattern of the Wall ✓
- Check in Go4 the triggers: ✓

Comments:

Electronic need to be reboot for 5A and 7C.

Exp No. | Primary Beam: | Date 25/3/2014

MBS/file location	**File (first)** / **File (last)** 1015	**Start** 13:30 / **Stop**
Narval/file location	**File (first)** / **File (last)** 64Fe_a51_coulex	**Start** / **Stop**
Merged(Narval+MBS)/file location	**File (first)** / **File (last)**	**Start** / **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☒ Production run

COMMENTS: **shift-in-charge**

FRS/BEAMLINE elements
- ☒ SEETRAM
- ☐ SCI-01
- ☒ FRS-TA0
- ☒ S1-degrader
- ☒ S2-degrader
- ☒ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☒ TA1
- ☒ TaDSSD

SPILL
- spill length: 1 D
- period:

FRS setting No.
S426_28

PRIMARY BEAM
- Element: 64Fe
- SIS energy [MeV/u]: 700
- Intensity-SEETRAM: 1.2.10^9

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number: #35
- element: Be
- thickness: 2.5

S1 DEGRADER
TS3ED2...
- Thickness: 2g/cm²
- Wedge used: 1
- O2 (Wedge Oben): -31.2
- V1 (Wedge Unten): -252.7

S2 DEGRADER
TS3ED7...
- Thickness: 5g/cm²
- L (Ladder):
- D (Disk): 60.6
- VO (Wedge Oben): -258.0
- VU (Wedge Unten): -258.0

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right): OPEN
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left): -40.0
- TS3DS2HR (right): +40.0

S2 SLITS
☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right): OPEN
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left): OPEN
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left): -35
- HFSDS3H (right): +35
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.82505
- TS3MU2: 0.87114
- TS4MU1: 0.73664
- HFSMU1: 0.73605

FRS-RATES (counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L: 495000
- SC21R: 380000
- SC41L: 4400
- SC41R: 4300

TA1
- Element : Au
- Thickness : 2g/cm²
- Position: central

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☒ AgataCal(3)/..4
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☒ p+HEC+Lyc(8)/..0
- ☒ p+Agata+Lyc(9)/.0
- ☒ Part-SC41(10)/..8
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☒ SCI41
- ☐ Other:

PreSPEC-Rates (Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / PIs. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling : 13:30
- Tank1 Vol. (%) : 95
- Tank2 Vol. (%) : 87

Exp No. Primary Beam: Date

MBS/file location /d/nising02/mar_A6_14/data	**File (first)** fe_64_FRS_tu_1020. **File (last)** .lmd	**Start** ~23:20 **Stop**
Narval/file location	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☐ Production run

beam problems reloading ~~last~~ last FRS setting. Writing file to check centering of beam offline

COMMENTS: **shift-in-charge**

FRS/BEAMLINE elements
- ☐ SEETRAM
- ☐ SCI-01
- ☐ FRS-TA0
- ☐ S1-degrader
- ☐ S2-degrader
- ☐ SCI-21
- ☐ S4-degrader
- ☐ LYCCA-Start
- ☐ LYCCA-TaStart
- ☐ TA1
- ☐ TaDSSD

SPILL
- spill length:
- period:

FRS setting No.

PRIMARY BEAM
- Element:
- SIS energy [MeV/u]:
- Intensity-SEETRAM:

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number:
- element:
- thickness:

S1 DEGRADER
TS3ED2...
- Thickness:
- Wedge used:
- O2 (Wedge Oben):
- V1 (Wedge Unten):

S2 DEGRADER
TS3ED7...
- Thickness:
- L (Ladder):
- D (Disk):
- VO (Wedge Oben):
- VU (Wedge Unten):

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right):
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left):
- TS3DS2HR (right):

S2 SLITS
☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right):
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left):
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left):
- HFSDS3H (right):
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.92525
- TS3MU2: 0.87114
- TS4MU1: 0.73664
- HFSMU1: 0.73605

FRS-RATES
(counts/spill)
- 10 kHrtz :
- 10 kHrtz veto dT :
- SC21L:
- SC21R:
- SC41L:
- SC41R:

TA1
- Element :
- Thickness :
- Position:

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☐ AgataCal(3)/.....
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☐ p+HEC+Lyc(8)/.....
- ☐ p+Agata+Lyc(9)/...
- ☐ Part-SC41(10)/.....
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☐ SCI41
- ☐ Other:

PreSPEC-Rates
(Validated/Rejected)
- AGATA :
- FRS :
- Ta-ToF-LYCCA :
- HECTOR :

LYCCA / Pls. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling :
- Tank1 Vol. (%) :
- Tank2 Vol. (%) :

Exp No. | Primary Beam: 86Kr | Date 26.03.2014

MBS/file location	**File (first)** Fe_64Louvex_AR55_1021 **File (last)**	**Start** 0:58 **Stop**
Narval/file location run 55	**File (first)** **File (last)**	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☒ Production run

fabry Coulex data

COMMENTS: **shift-in-charge**

64Fe production is less than before (only 4% instead of 25%)

FRS/BEAMLINE elements

- ☒ SEETRAM
- ☐ SCI-01
- ☒ FRS-TA0
- ☒ S1-degrader
- ☒ S2-degrader
- ☒ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☒ TA1
- ☒ TaDSSD

SPILL

spill length: 1 sec

period: 2.5 sec

FRS setting No.

5426_28

PRIMARY BEAM

Element: Kr

SIS energy [MeV/u]: 700

Intensity-SEETRAM: 1.4x10^9

PROD. TARGET

TS1ET5HS, TS1ET5VS:

number: 35

element: Be

thickness: 2.5g/cm²

S1 DEGRADER

TS3ED2...

Thickness: 2g/cm²

Wedge used: 1

O2 (Wedge Oben): -31.25

V1 (Wedge Unten): -252.7

S2 DEGRADER

TS3ED7...

Thickness: 5g/cm²

L (Ladder): -107.7

D (Disk): 60.7

VO (Wedge Oben): -298.0

VU (Wedge Unten): -298.0

S4 DEGRADER

HFSED3...

Thickness:

O (Wedge Oben):

U (Wedge Unten):

S0 SLITS

☐ beam stop out

TS2DS3HL (left):

TS2DS3HR (right):

TS2DS3VO (top):

TS2DS3VU (bottom):

S1 SLITS

☐ beam plug out

TS3DS2HL (left): -15

TS3DS2HR (right): 40

S2 SLITS

☐ beam plug out

TS4DS1HL (left):

TS4DS1HR (right):

TS4DS1VO (left):

TS4DS1VU (right):

S3 SLITS

TS4DS3HL (left):

TS4DS3HR (right):

S4 SLITS

HFSDS3H (left): +35

HFSDS3H (right): 35

Pb Brick (top):

Pb Brick (bottom):

MAGNETS

Field values from Hall probes:

TS3MU1: 0.92515

TS3MU2: 0.87114

TS4MU1: 0.73664

HFSMU1: 0.73605

FRS-RATES

(counts/spill)

10 kHrtz :

10 kHrtz veto dT :

SC21L: 499.000

SC21R: 403.000

SC41L: 4800

SC41R: 4700

TA1

Element : Al

Thickness : 2g/cm²

Position: central

PreSPEC-Trig/red.

- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☒ AgataCal(3)/.....8
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☒ p+HEC+Lyc(8)/.....
- ☒ p+Agata+Lyc(9)/...
- ☒ Part-SC41(10)/...8
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER

- ☐ SCI21
- ☒ SCI41
- ☐ Other:

PreSPEC-Rates

(Validated/Rejected)

AGATA : 50/610

FRS :

Ta-ToF-LYCCA :

HECTOR :

LYCCA / Pls. check

- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2

LN2 Last Filling : 9.40pm

Tank1 Vol. (%) : 84

Tank2 Vol. (%) : 78

Check list

Name: Natasa

Time: 01:34

Agata

- Run number: 55
- Agava requested: 334
- Agava validated: 276
- Screenshot trigger rate + spectrum of time coincidence : ✓
- Check in Go4 that all Agata-TDC spectra are there: ✓
- Check that the last .cdat files has been written less then 10 minutes ago for all the crystals: ✓
- Copy and paste in a text file the GTS rate: ✓
- Check Spectra of all crystals: ✓
- Check at the sum spectra "Global level":
- - number of counts in 511 keV:
- - number of counts in 1460 keV K:
-
- Crystals with problems:

General

- lmd file nr: 1021
- Beam intensity: ~1.3 $\times 10^9$
- Scaler sc at S4: ~16000
- Scaler sc at S2: ~970000
- Check in Go4 all the spectra of the list* :
- Check in Go4 the hit pattern of the Wall ✓
- Check in Go4 the triggers: 1, 3, 8, 9, 10

Comments:

TR 3 reduced → factor 8

Exp No. | Primary Beam: | Date

MBS/file location /d/nov02/mar_16_14/data	**File (first)** 1022 **File (last)**	**Start** 02:15 **Stop**
Narval/file location	**File (first)** **File (last)** run 55	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ^{69}Tc coulex ☐ Calibration run ☒ Production run

COMMENTS: **shift-in-charge** Marc

FRS/BEAMLINE elements
- ☒ SEETRAM
- ☐ SCI-01
- ☒ FRS-TA0
- ☒ S1-degrader
- ☒ S2-degrader
- ☒ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☒ TA1
- ☒ TaDSSD

SPILL
- spill length: 1s
- period: 2.8s

FRS setting No.
S426_28

PRIMARY BEAM
- Element: $^{86}Kr^{33+}$
- SIS energy [MeV/u] 700.000
- Intensity-SEETRAM 1.4·10^{9}

PROD. TARGET
TS1ET5HS, TS1ET5VS:
- number: #35
- element: Be
- thickness: 2.5

S1 DEGRADER
TS3ED2...
- Thickness: 2g/cm2
- Wedge used: 1
- O2 (Wedge Oben): -31.2
- V1 (Wedge Unten): -252.7

S2 DEGRADER
TS3ED7...
- Thickness: 5g/cm2
- L (Ladder): -107.7
- D (Disk): 60.6
- VO (Wedge Oben): -258
- VU (Wedge Unten): -258

S4 DEGRADER
HFSED3...
- Thickness:
- O (Wedge Oben):
- U (Wedge Unten):

S0 SLITS
☐ beam stop out
- TS2DS3HL (left):
- TS2DS3HR (right): OPEN
- TS2DS3VO (top):
- TS2DS3VU (bottom):

S1 SLITS
☐ beam plug out
- TS3DS2HL (left): -19
- TS3DS2HR (right): +40

S2 SLITS
☐ beam plug out
- TS4DS1HL (left):
- TS4DS1HR (right): OPEN
- TS4DS1VO (left):
- TS4DS1VU (right):

S3 SLITS
- TS4DS3HL (left): OPEN
- TS4DS3HR (right):

S4 SLITS
- HFSDS3H (left): -35
- HFSDS3H (right): +35
- Pb Brick (top):
- Pb Brick (bottom):

MAGNETS
Field values from Hall probes:
- TS3MU1: 0.92525
- TS3MU2: 0.87114
- TS4MU1: 0.73664
- HFSMU1: 0.73605

FRS-RATES
(counts/spill)
- 10 kHrtz : 26670
- 10 kHrtz veto dT : 25980
- SC21L: 500k
- SC21R: 480k
- SC41L: 4800
- SC41R: 4600

TA1
- Element : Au
- Thickness : 2g/cm2
- Position: central

PreSPEC-Trig/red.
- ☐ Pulser(1) /.....
- ☐ LYCCA cal(2)/.....
- ☒ AgataCal(3)/..4..
- ☐ HEC Cal(4)/.....
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.....
- ☐ p+Agata(7)/.....
- ☒ p+HEC+Lyc(8)/..2..
- ☒ p+Agata+Lyc(9)/..0..
- ☑ Part-SC41(10)/..8..
- ☐ Spill-on(12)/.....
- ☐ Spill-off(13)/.....

FRS-TRIGGER
- ☐ SCI21
- ☒ SCI41
- ☐ Other:

PreSPEC-Rates
(Validated/~~Rejected~~)
- AGATA : 450/340 5000
- FRS : 500
- Ta-ToF-LYCCA : 500
- HECTOR : 500

LYCCA / PIs. check
- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2
- LN2 Last Filling : 01:56am
- Tank1 Vol. (%) : 79
- Tank2 Vol. (%) : 76

Exp No. Primary Beam: Date

MBS/file location d/risi.../mar-AG_19/data	**File (first)** 1026 **File (last)**	**Start** 3:40 **Stop**
Narval/file location	**File (first)** **File (last)** run55	**Start** **Stop**
Merged(Narval+MBS)/file location	**File (first)** **File (last)**	**Start** **Stop**

PURPOSE OF MEASUREMENT: (Centered Isotope) ☐ Calibration run ☒ Production run

64 Fe coulex

COMMENTS: **shift-in-charge**

FRS/BEAMLINE elements

- ☒ SEETRAM
- ☐ SCI-01
- ☒ FRS-TA0
- ☒ S1-degrader
- ☒ S2-degrader
- ☒ SCI-21
- ☐ S4-degrader
- ☒ LYCCA-Start
- ☐ LYCCA-TaStart
- ☒ TA1
- ☒ TaDSSD

SPILL

spill length: 15

period: 2.55

FRS setting No. S426_28

PRIMARY BEAM

Element: $^{86}Kr^{33+}$

SIS energy [MeV/u]: 700

Intensity-SEETRAM: 1.4 · 10⁹

PROD. TARGET

TS1ET5HS, TS1ET5VS:

number: # 35

element: Be

thickness: 2.5

S1 DEGRADER

TS3ED2...

Thickness: 2g/cm²

Wedge used: 1

O2 (Wedge Oben): -31.2

V1 (Wedge Unten): -252.7

S2 DEGRADER

TS3ED7...

Thickness: 5g/cm²

L (Ladder): -107.7

D (Disk): 60.6

VO (Wedge Oben): -298

VU (Wedge Unten): -218

S4 DEGRADER

HFSED3...

Thickness:

O (Wedge Oben):

U (Wedge Unten):

S0 SLITS

☐ beam stop out

TS2DS3HL (left):

TS2DS3HR (right):

TS2DS3VO (top):

TS2DS3VU (bottom):

OPEN

S1 SLITS

☐ beam plug out

TS3DS2HL (left): -15

TS3DS2HR (right): +40

S2 SLITS

☐ beam plug out

TS4DS1HL (left):

TS4DS1HR (right):

TS4DS1VO (left):

TS4DS1VU (right):

OPEN

S3 SLITS

TS4DS3HL (left):

TS4DS3HR (right):

OPEN

S4 SLITS

HFSDS3H (left): -55

HFSDS3H (right): +35

Pb Brick (top):

Pb Brick (bottom):

MAGNETS

Field values from Hall probes:

TS3MU1: 0.92515

TS3MU2: 0.87124

TS4MU1: 0.73665

HFSMU1: 0.73605

FRS-RATES

(counts/spill)

10 kHrtz: 28098

10 kHrtz veto dT: 26786

SC21L: 500k

SC21R: 480k

SC41L: 4700

SC41R: 4500

TA1

Element: In

Thickness: 2g/cm²

Position: central

PreSPEC-Trig/red.

- ☐ Pulser(1) /........
- ☐ LYCCA cal(2)/.....
- ☒ AgataCal(3)/..4..
- ☐ HEC Cal(4)/......
- ☐ FRS from TB(5)/...
- ☐ p+HEC(6)/.......
- ☐ p+Agata(7)/......
- ☒ p+HEC+Lyc(8)/..0..
- ☒ p+Agata+Lyc(9)/..0..
- ☒ Part-SC41(10)/..8..
- ☐ Spill-on(12)/.......
- ☐ Spill-off(13)/.......

FRS-TRIGGER

- ☐ SCI21
- ☒ SCI41
- ☐ Other:

PreSPEC-Rates

(Validated/~~Rejected~~ req)

AGATA: 350/450

FRS: 400

Ta-ToF-LYCCA: 400

HECTOR: 400

LYCCA / Pls. check

- ☐ Run-sheet filled
- ☐ Run-sheet uploaded on elog

LN2

LN2 Last Filling: 01:56am

Tank1 Vol. (%): 74

Tank2 Vol. (%): 70

Check list

Name: D. Lalović

Time: 03:30

Agata

- Run number: 55
- Agava requested: 542
- Agava validated: 442
- Screenshot trigger rate + spectrum of time coincidence : ✓
- Check in Go4 that all Agata-TDC spectra are there: ✓
- Check that the last .cdat files has been written less then 10 minutes ago for all the crystals: ✓
- Copy and paste in a text file the GTS rate: ✓
- Check Spectra of all crystals: ✓
- Check at the sum spectra "Global level":
- - number of counts in 511 keV:
- - number of counts in 1460 keV K:
-
- Crystals with problems:

General

- lmd file nr: 1025
- Beam intensity: 1.4×10^9
- Scaler sc at S4: $\sim 1.5 \times 10^4$
- Scaler sc at S2: $\sim 9 \times 10^5$
- Check in Go4 all the spectra of the list* :
- Check in Go4 the hit pattern of the Wall ✓
- Check in Go4 the triggers: 1, 3, 8, 9, 10

Comments: For details on ~~xxx~~ lmd-files 1023
1024
1025
,

see the log-book