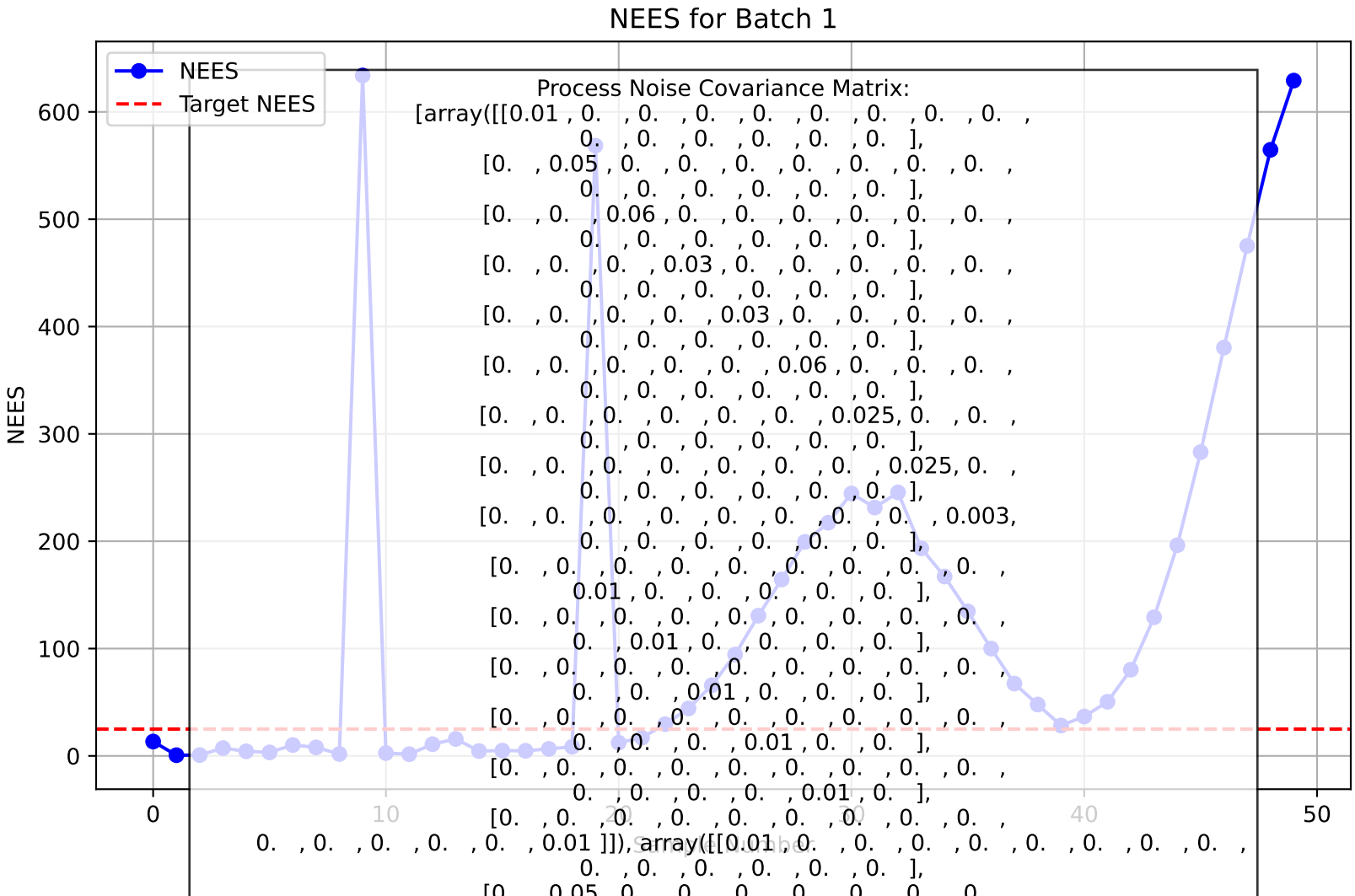
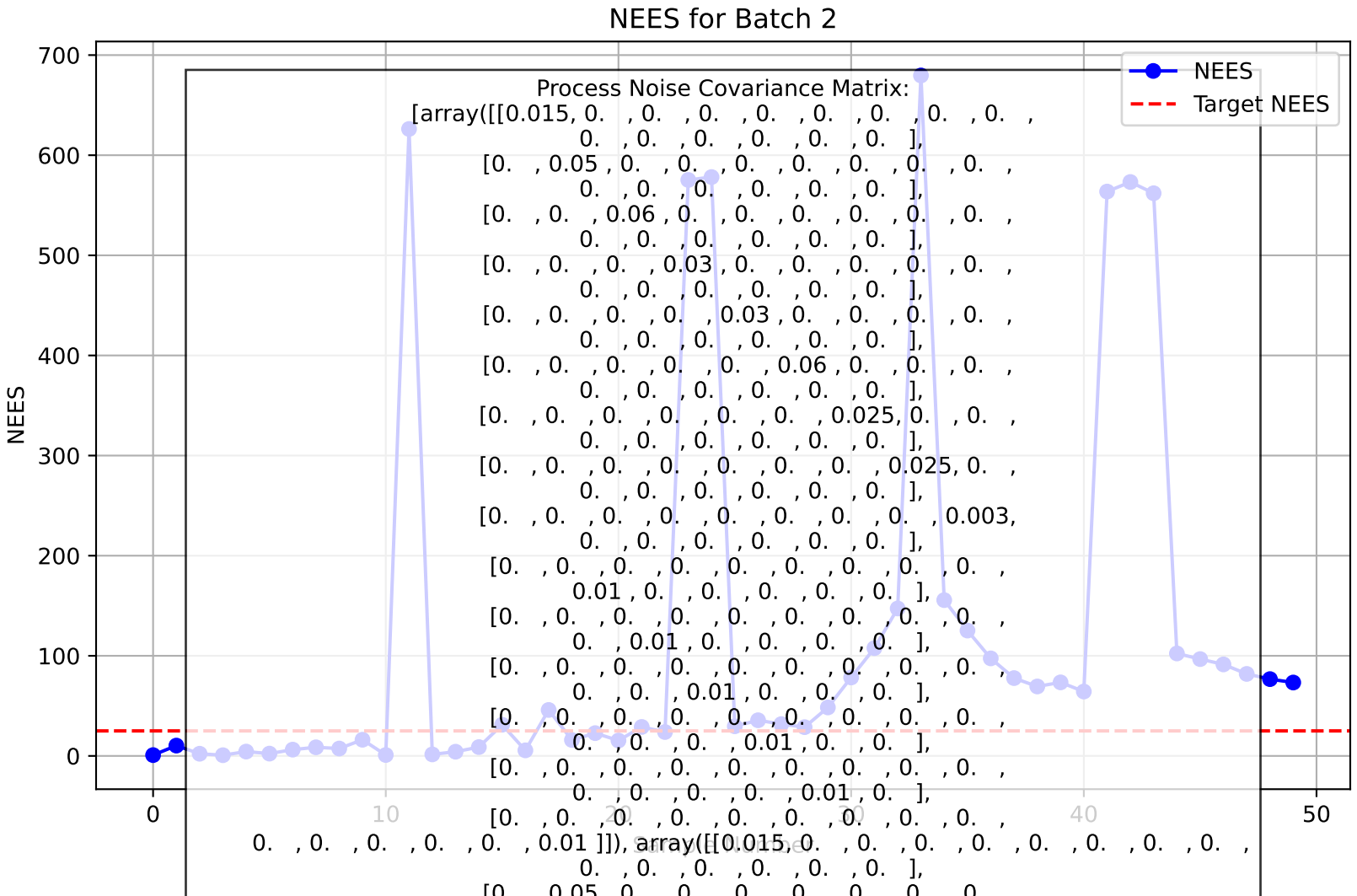
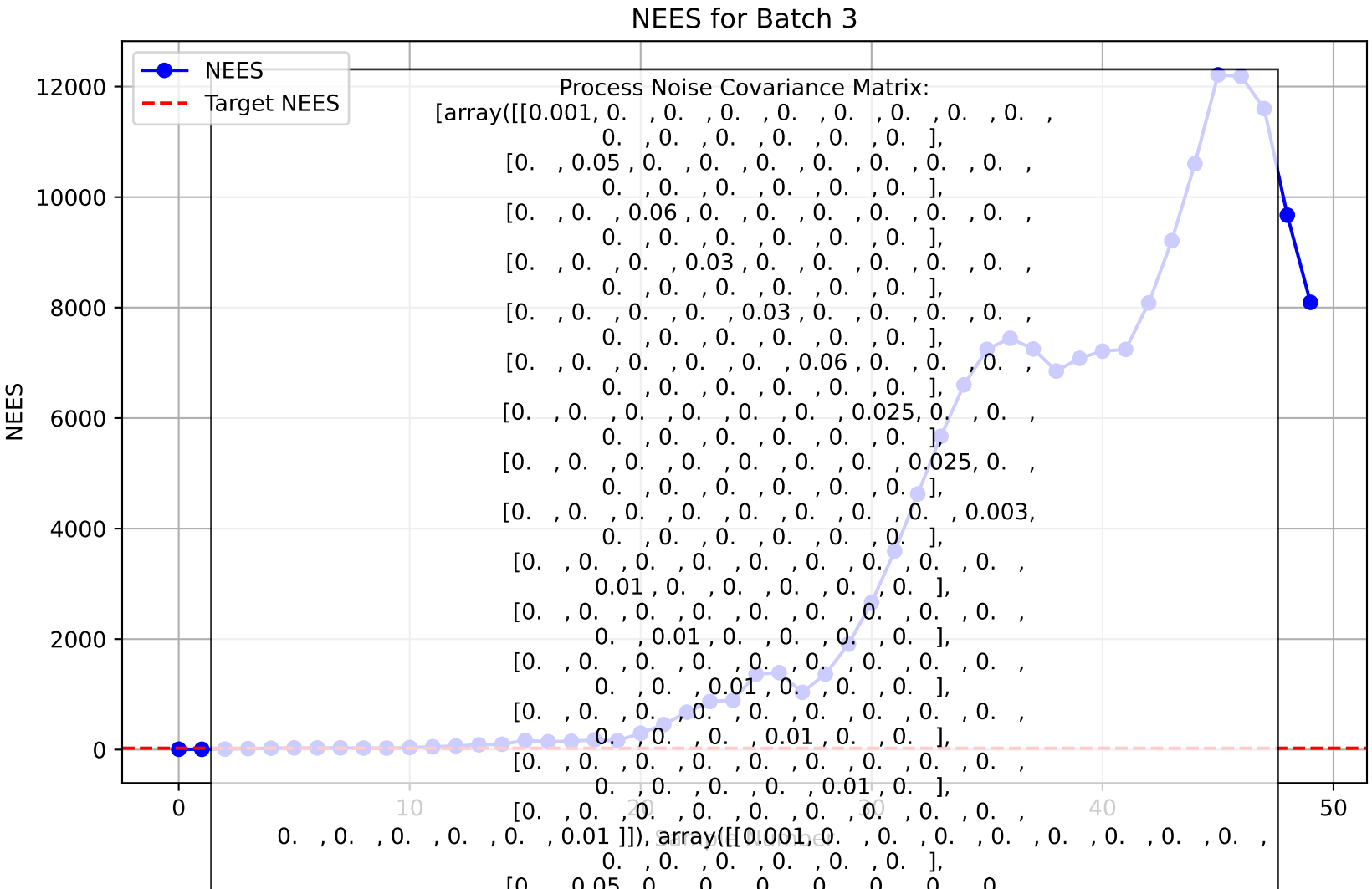
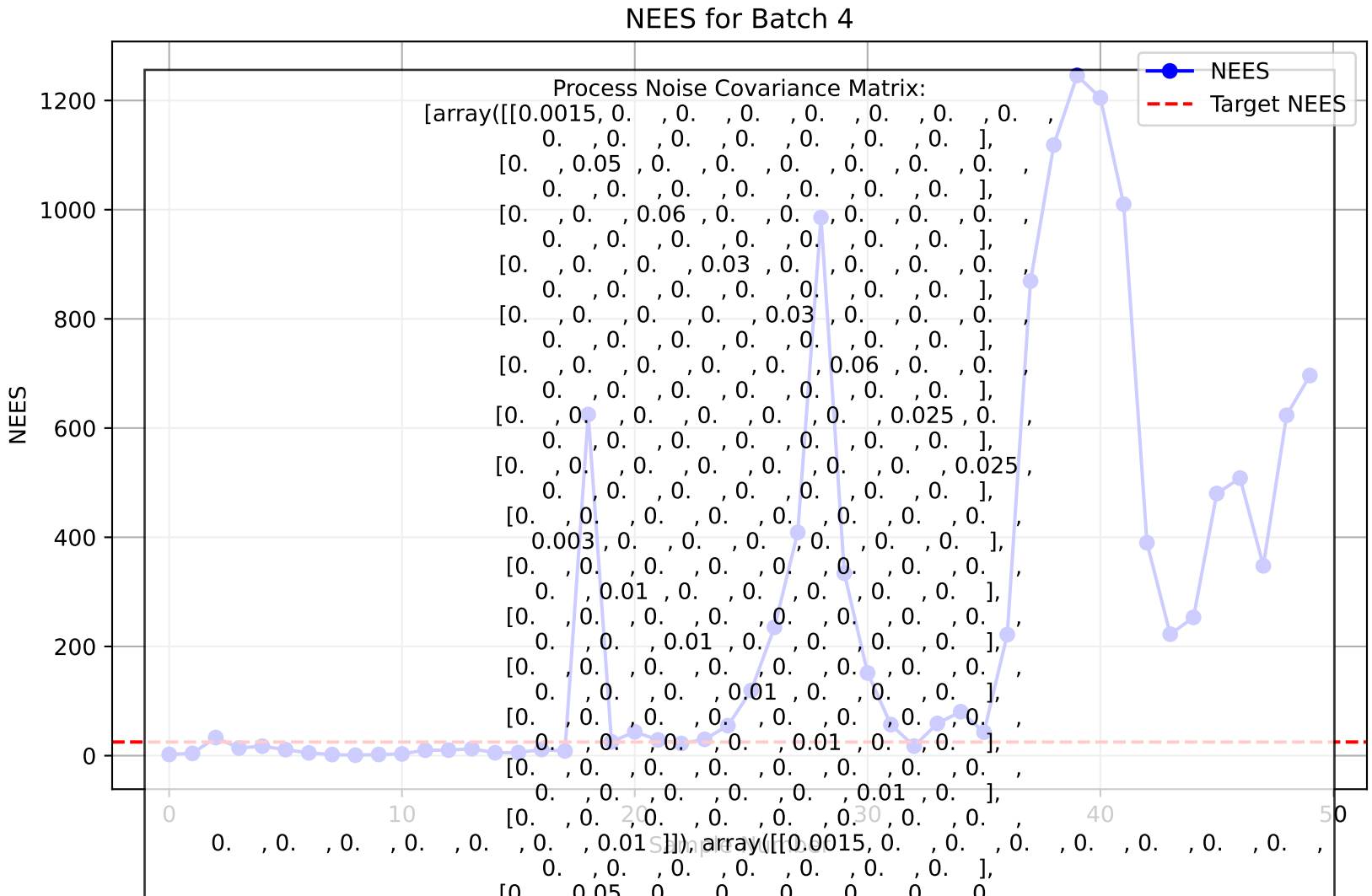
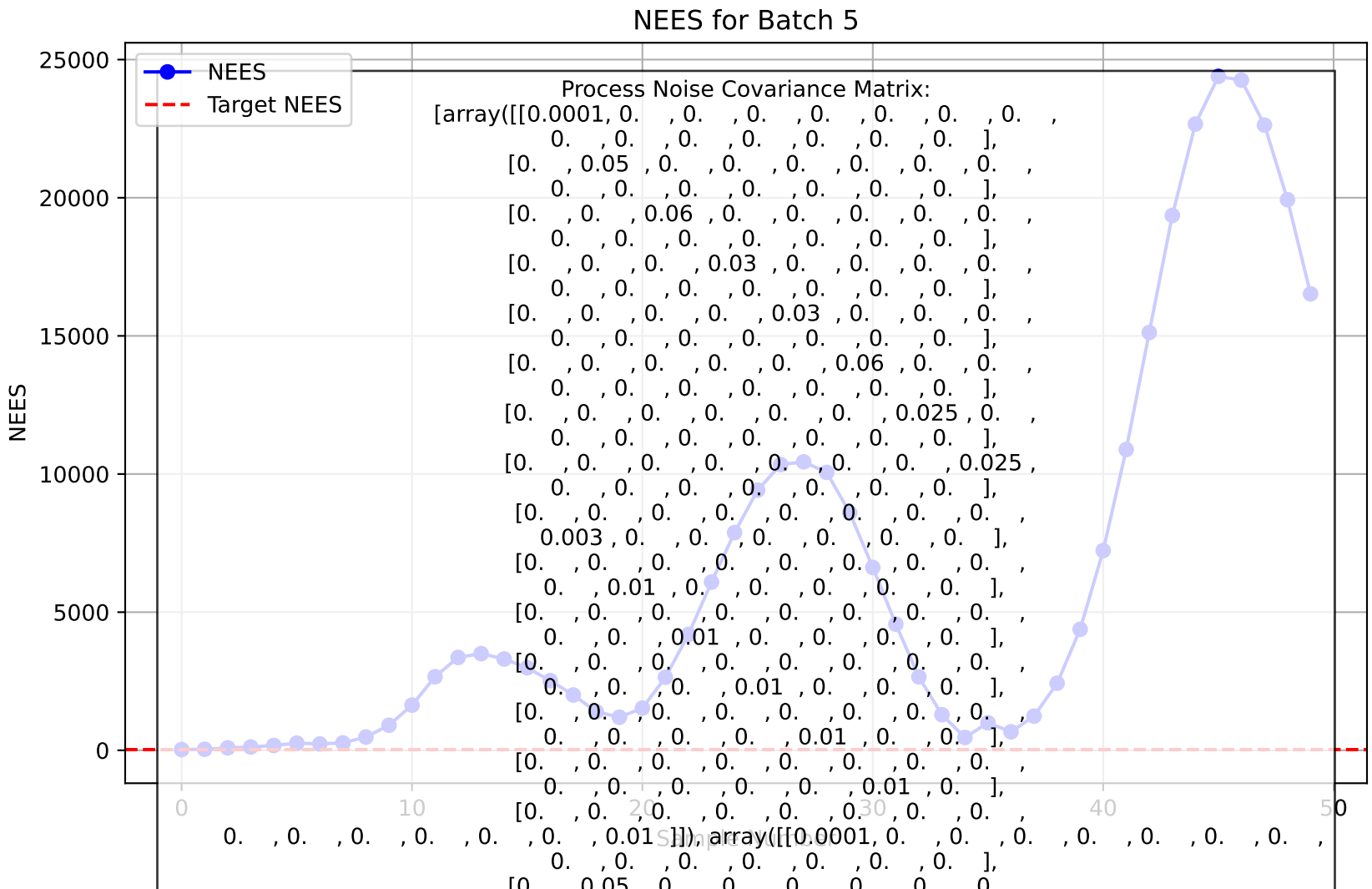
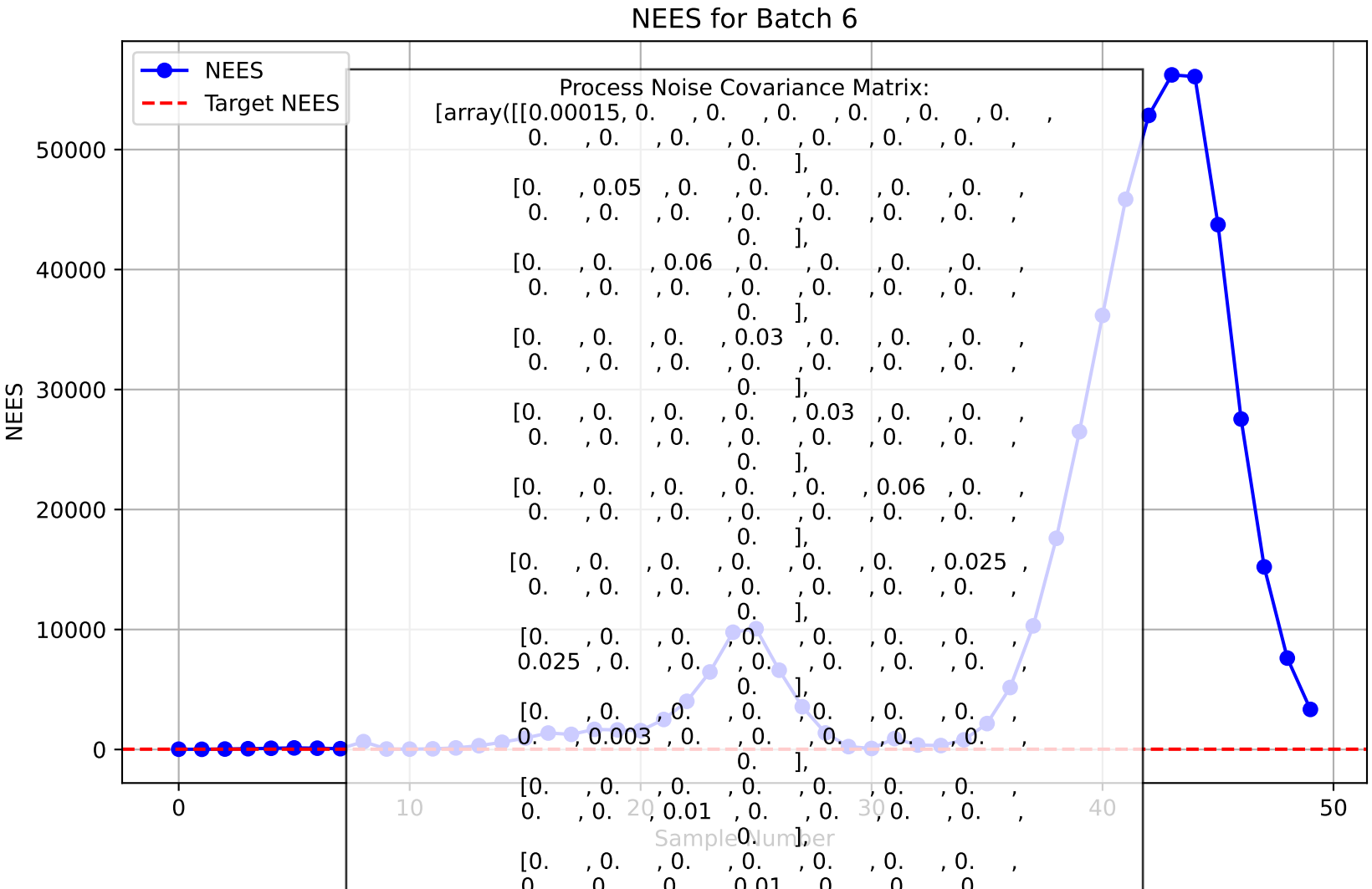

NEES for Batch 1
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.01 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.01 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0.
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600

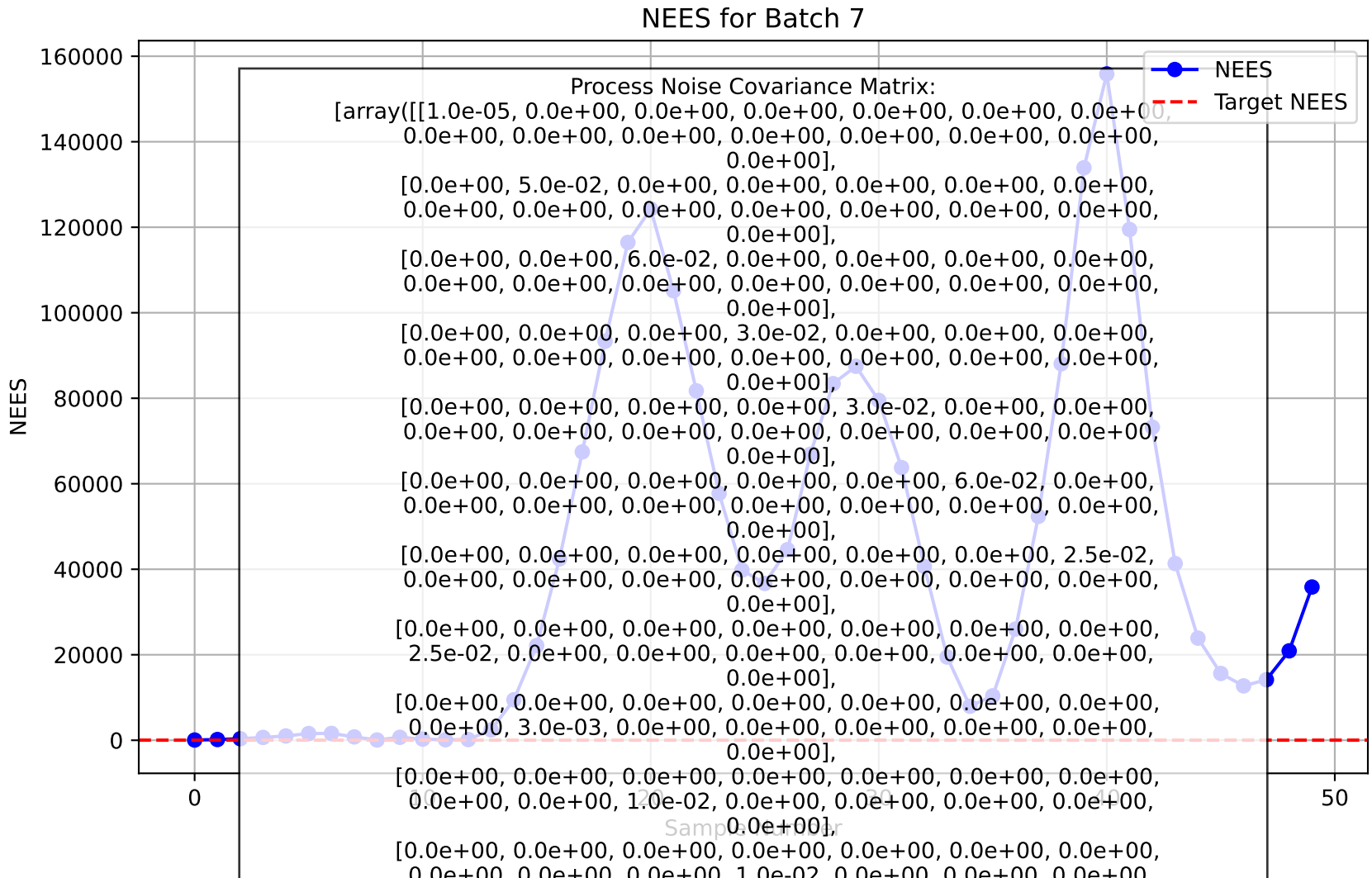

NEES for Batch 2
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.015, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.015, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
0
10
20
30
40
50
0
100
200
300
400
500
600
700

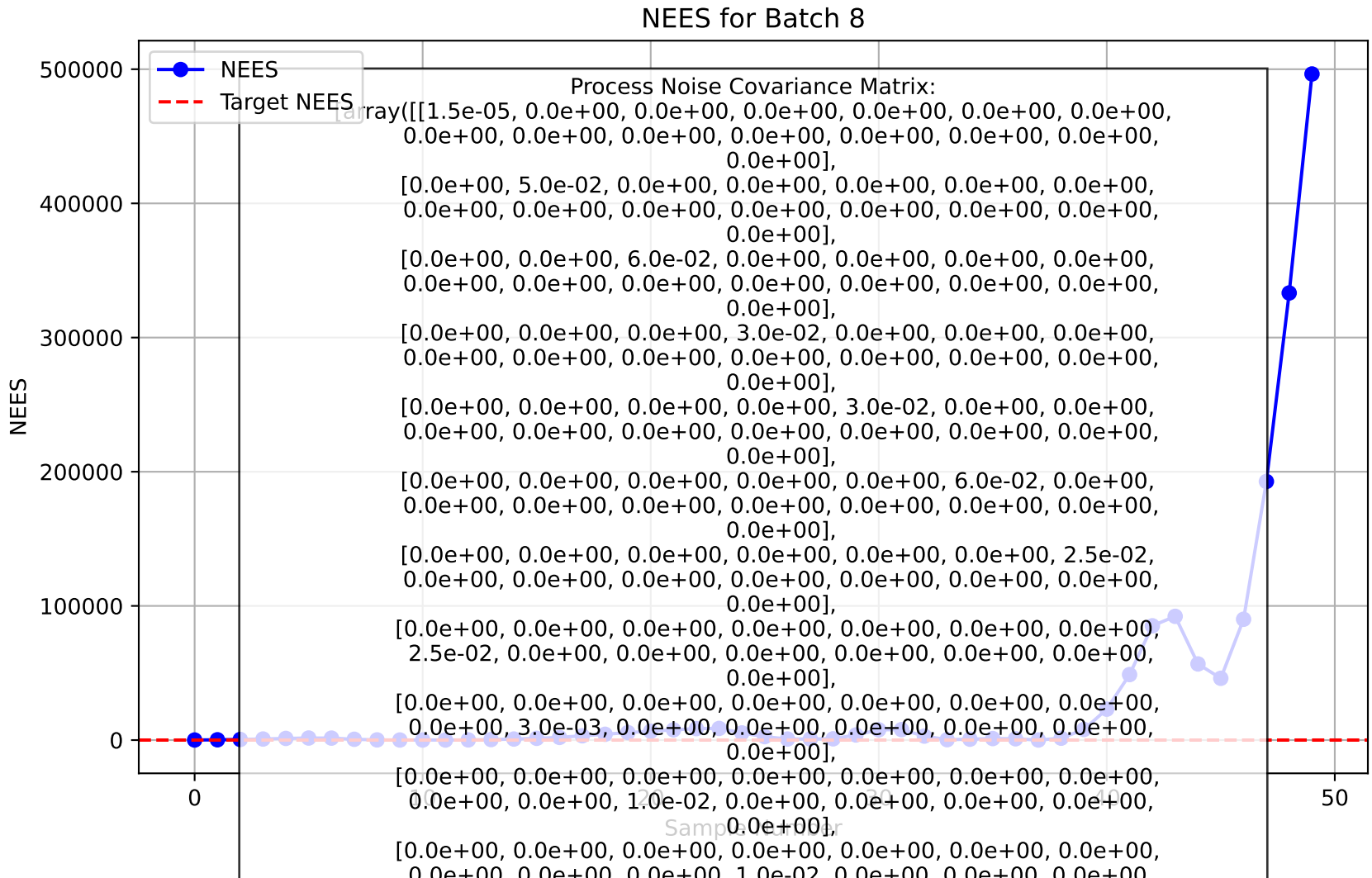

NEES for Batch 3
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.001, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.001, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Batch Number
0
2000
4000
6000
8000
10000
12000
0
10
20
30
40
50

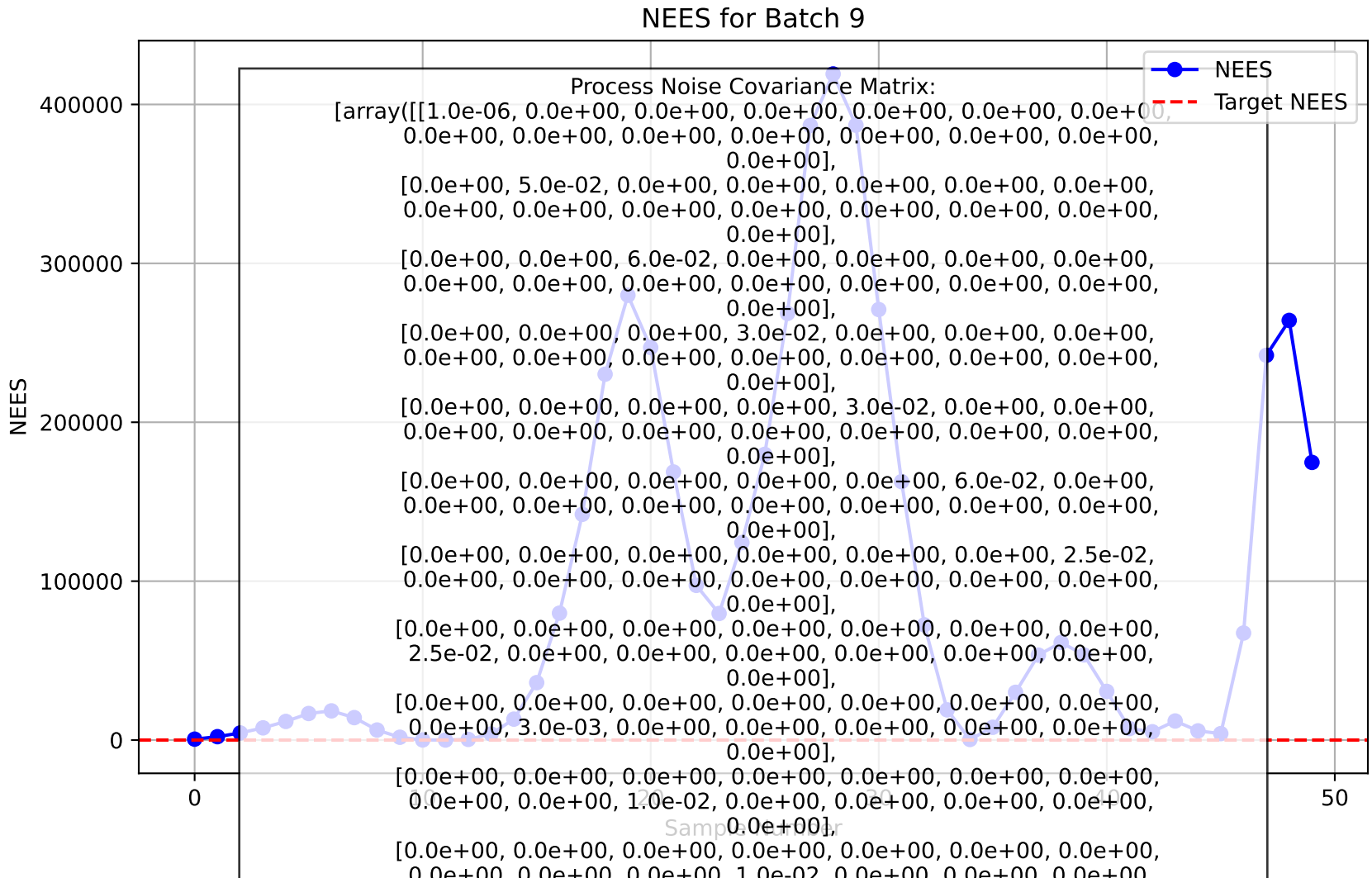

NEES for Batch 4
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.0015, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.0015, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.
0
200
400
600
800
1000
1200
0
10
20
30
40
50
Samples

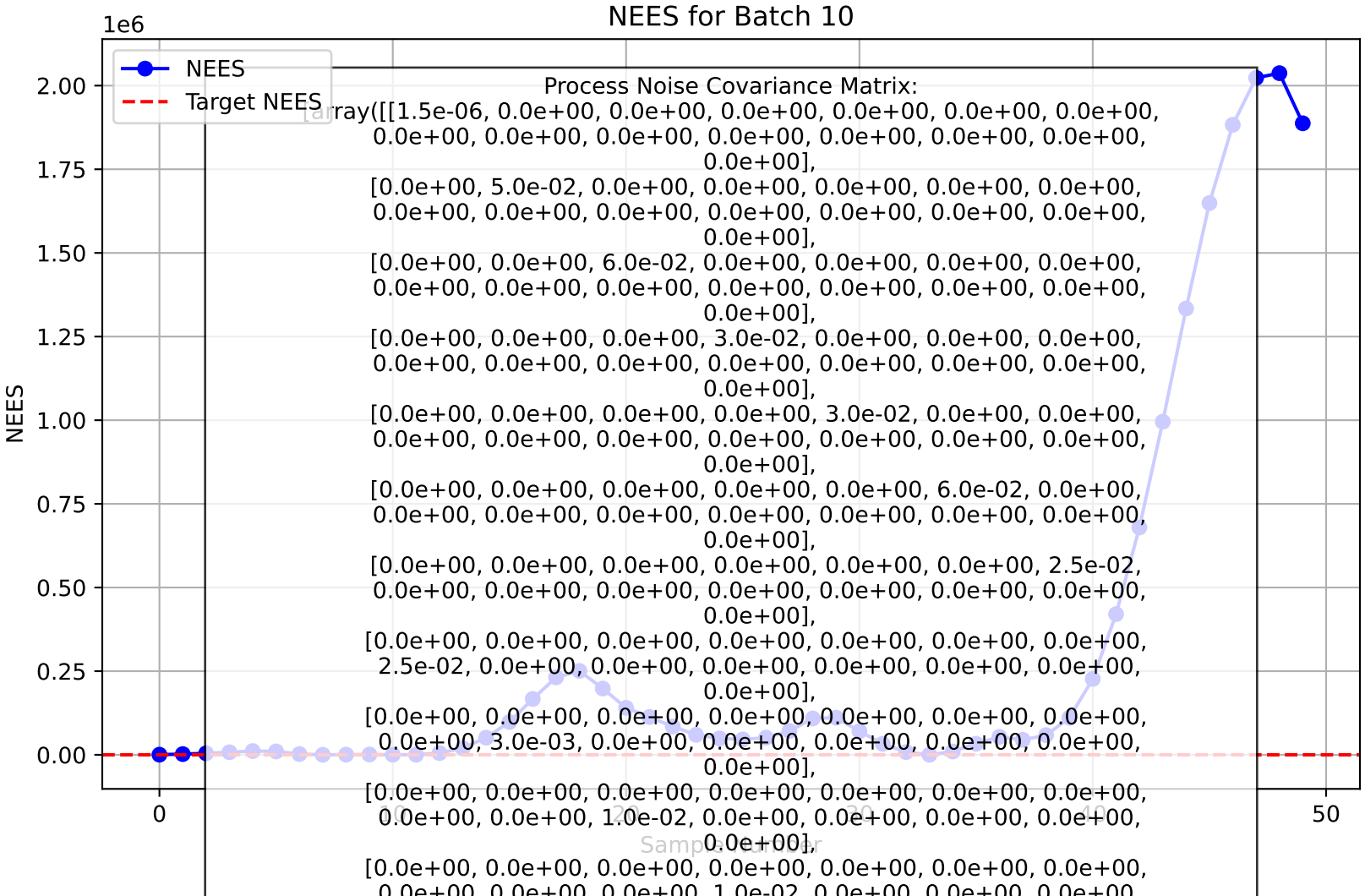

NEES for Batch 5
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.0001, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.0001, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Samples
0
10
20
30
40
50
0
5000
10000
15000
20000
25000


NEES for Batch 6
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.00015, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.003 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Sample Number
0
10000
20000
30000
40000
50000
0
10
20
30
40
50


NEES for Batch 7
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[1.0e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
160000
140000
120000
100000
80000
60000
40000
20000
0
0
50


NEES for Batch 8
NEES
Target NEES
Process Noise Covariance Matrix:
array([[1.5e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
500000
400000
300000
200000
100000
0
0
50


NEES for Batch 9
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[1.0e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
400000
300000
200000
100000
0
0
50
Sample Number


NEES for Batch 10
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
array([[1.5e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
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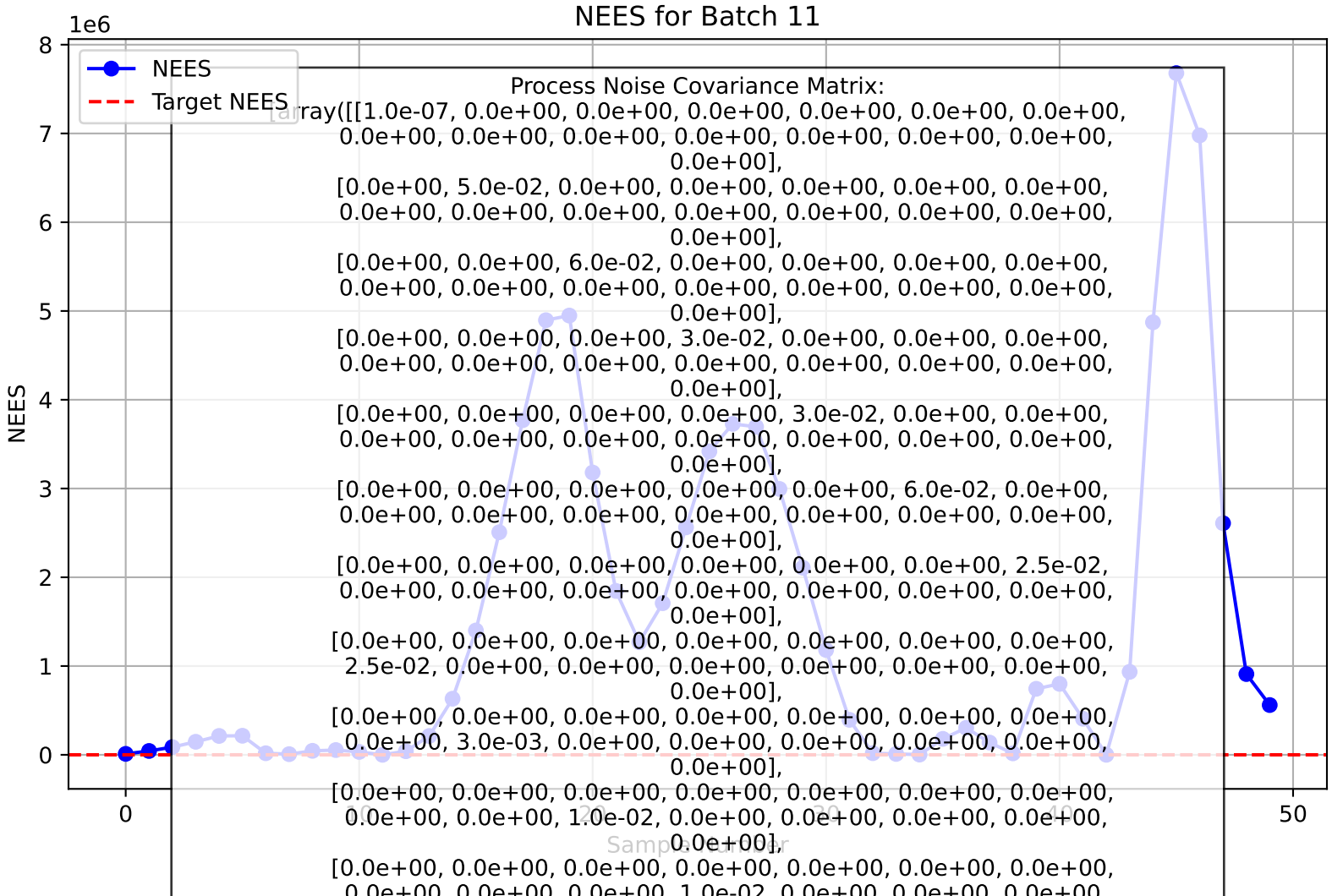
1.50
1.25
1.00
0.75
0.50
0.25
0.00
NEES
0
50
Sample Number


NEES for Batch 11
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
array([[1.0e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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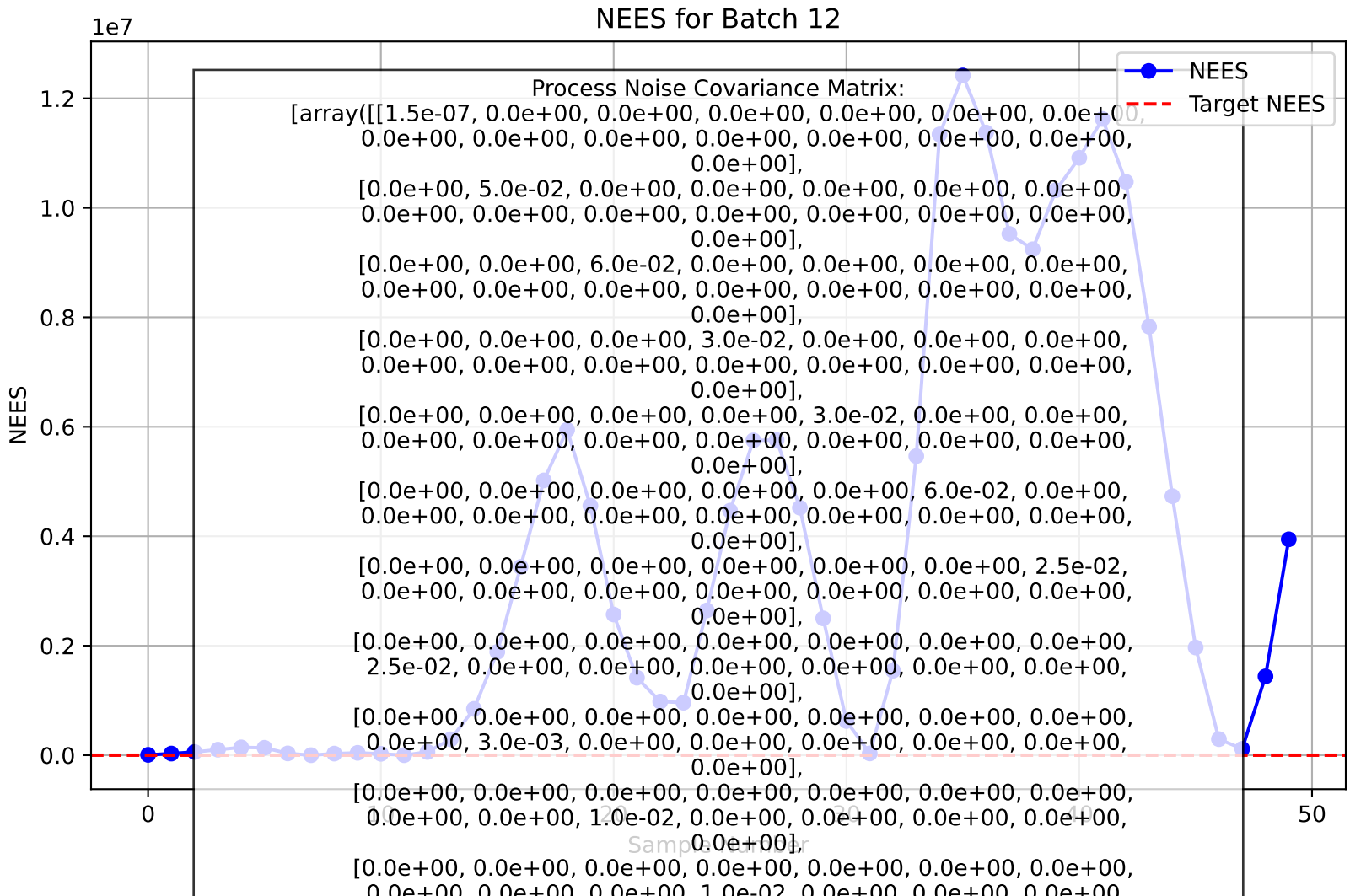
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50


NEES for Batch 12
1e7
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[1.5e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
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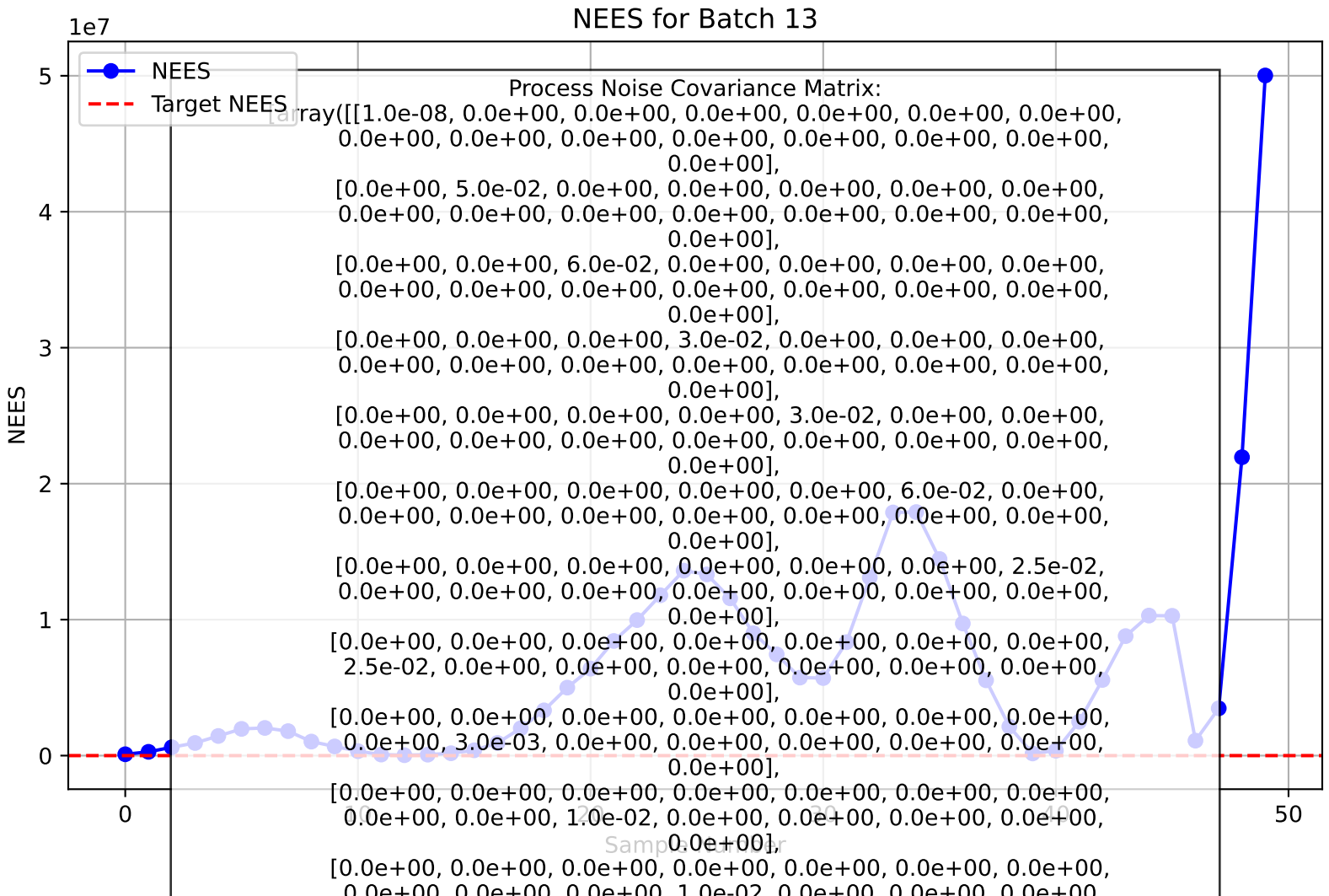
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
50


NEES for Batch 13
1e7
NEES
Target NEES
Process Noise Covariance Matrix:
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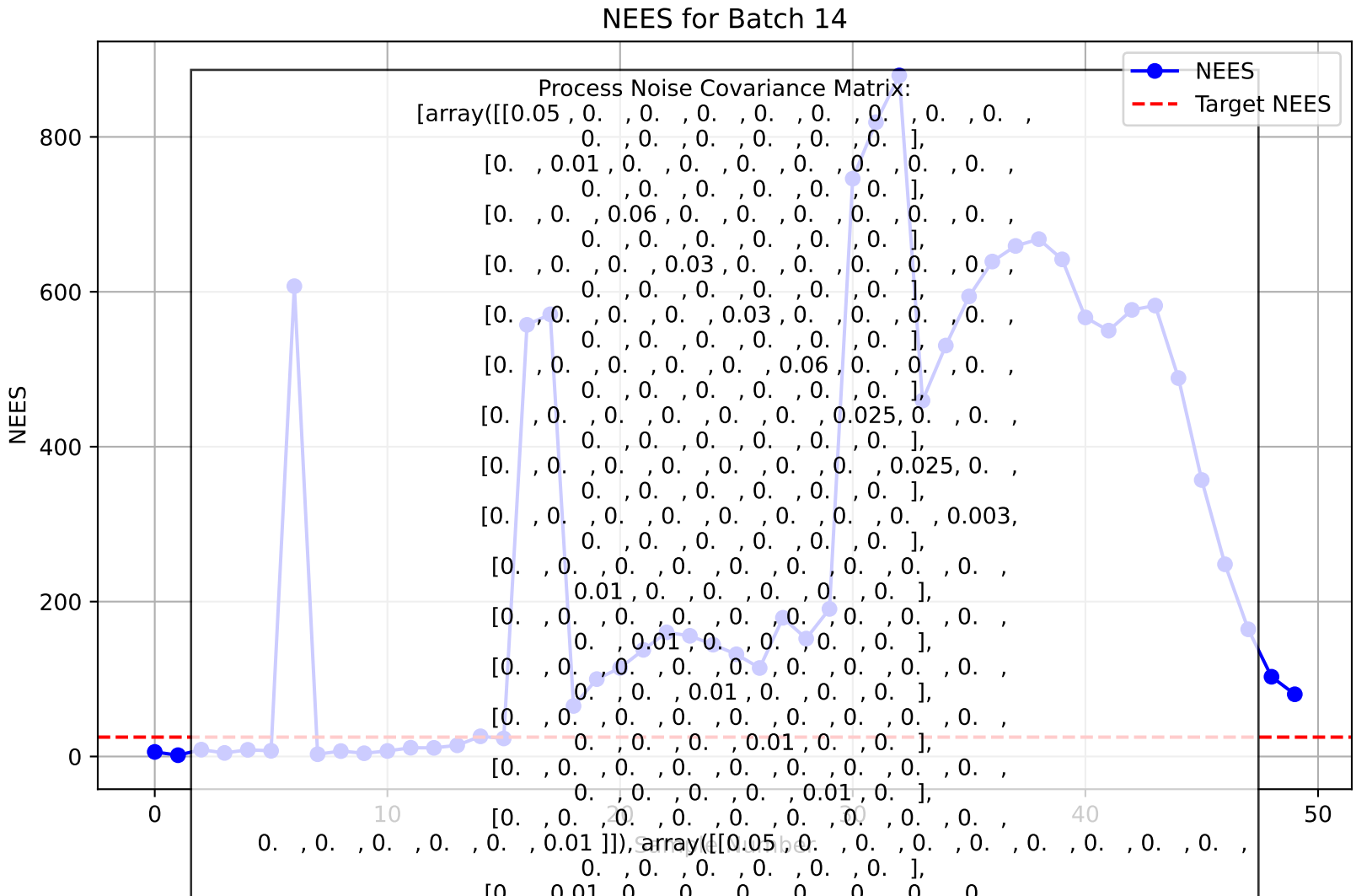
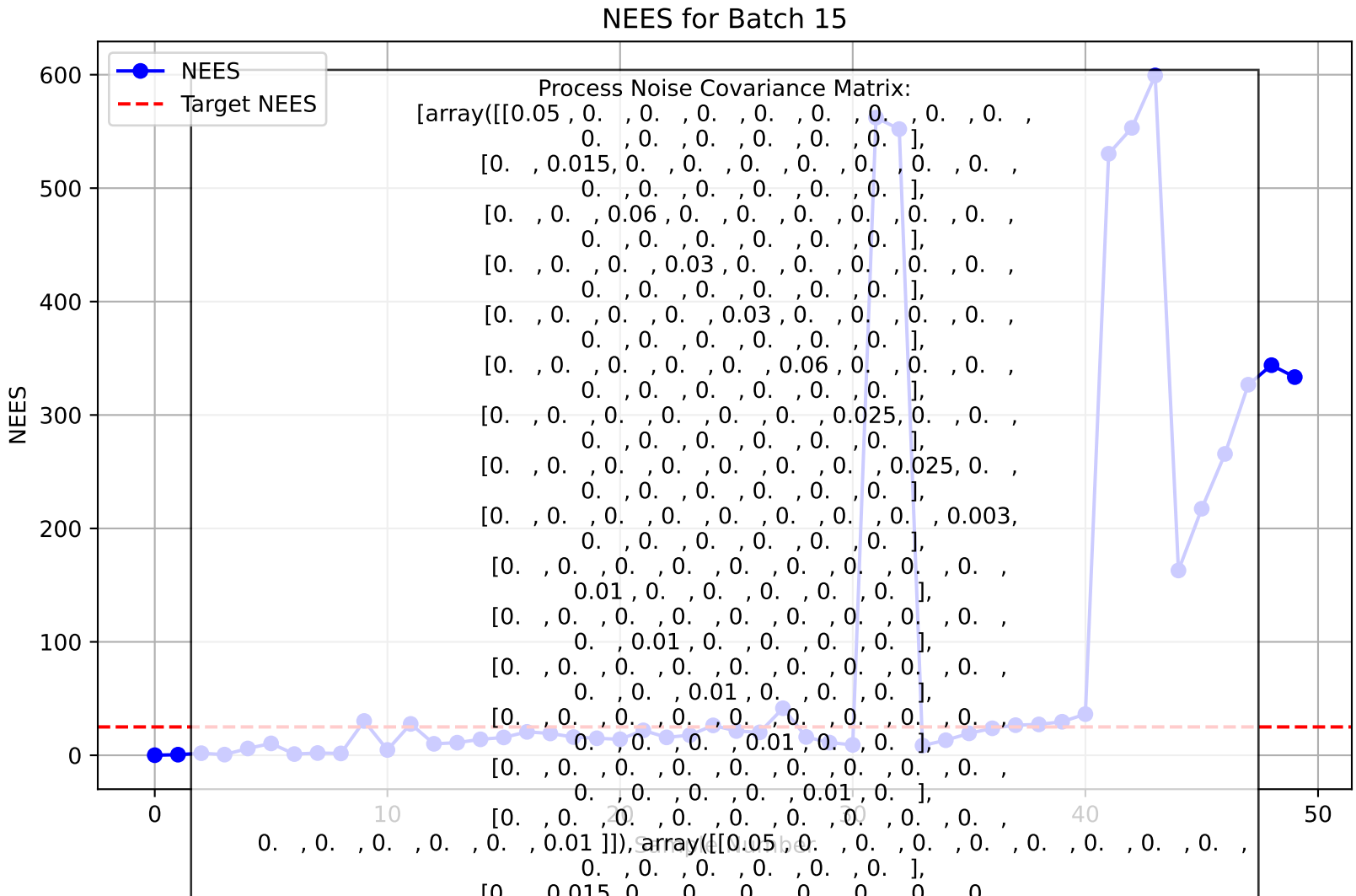
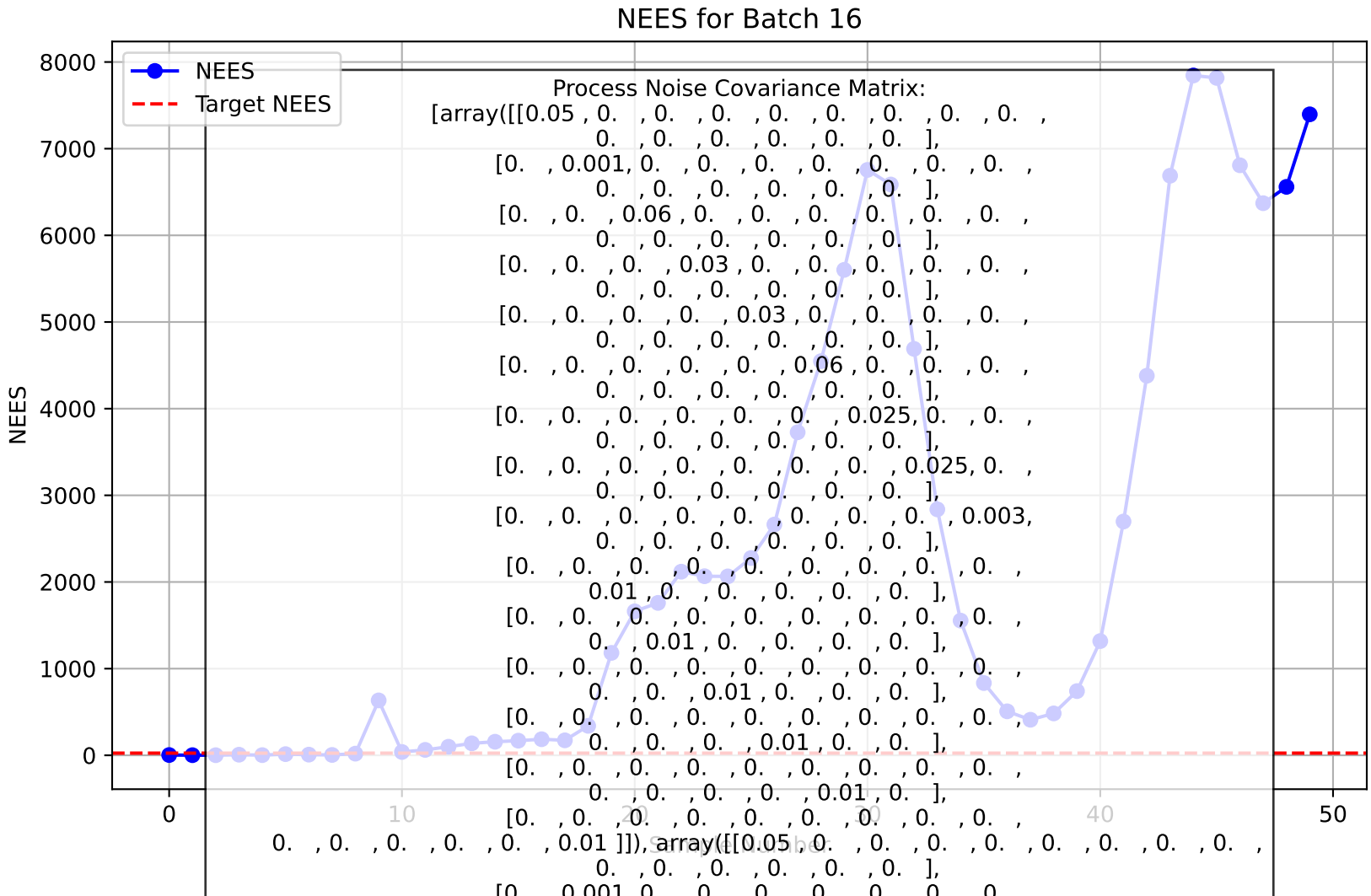
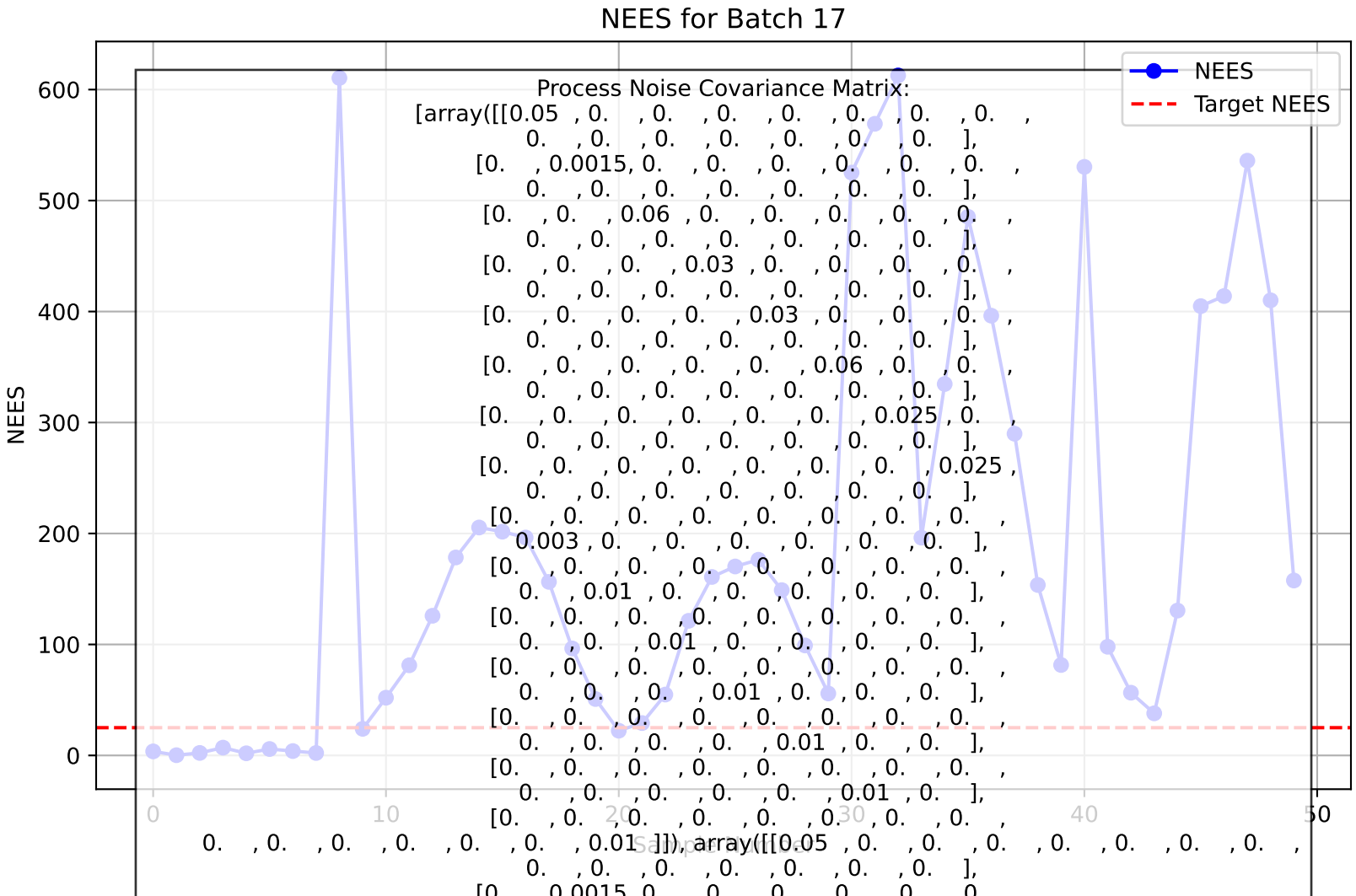
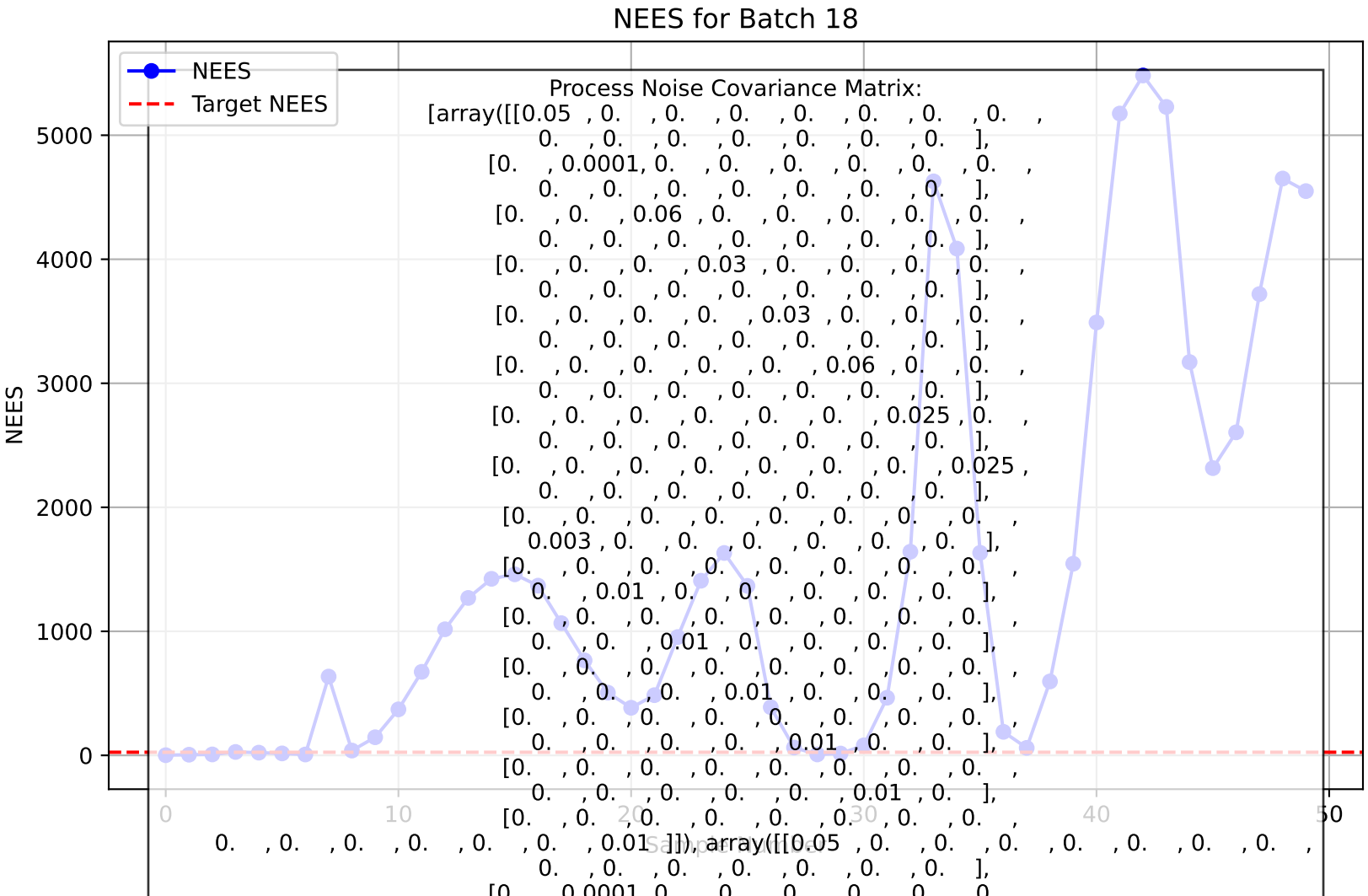
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50

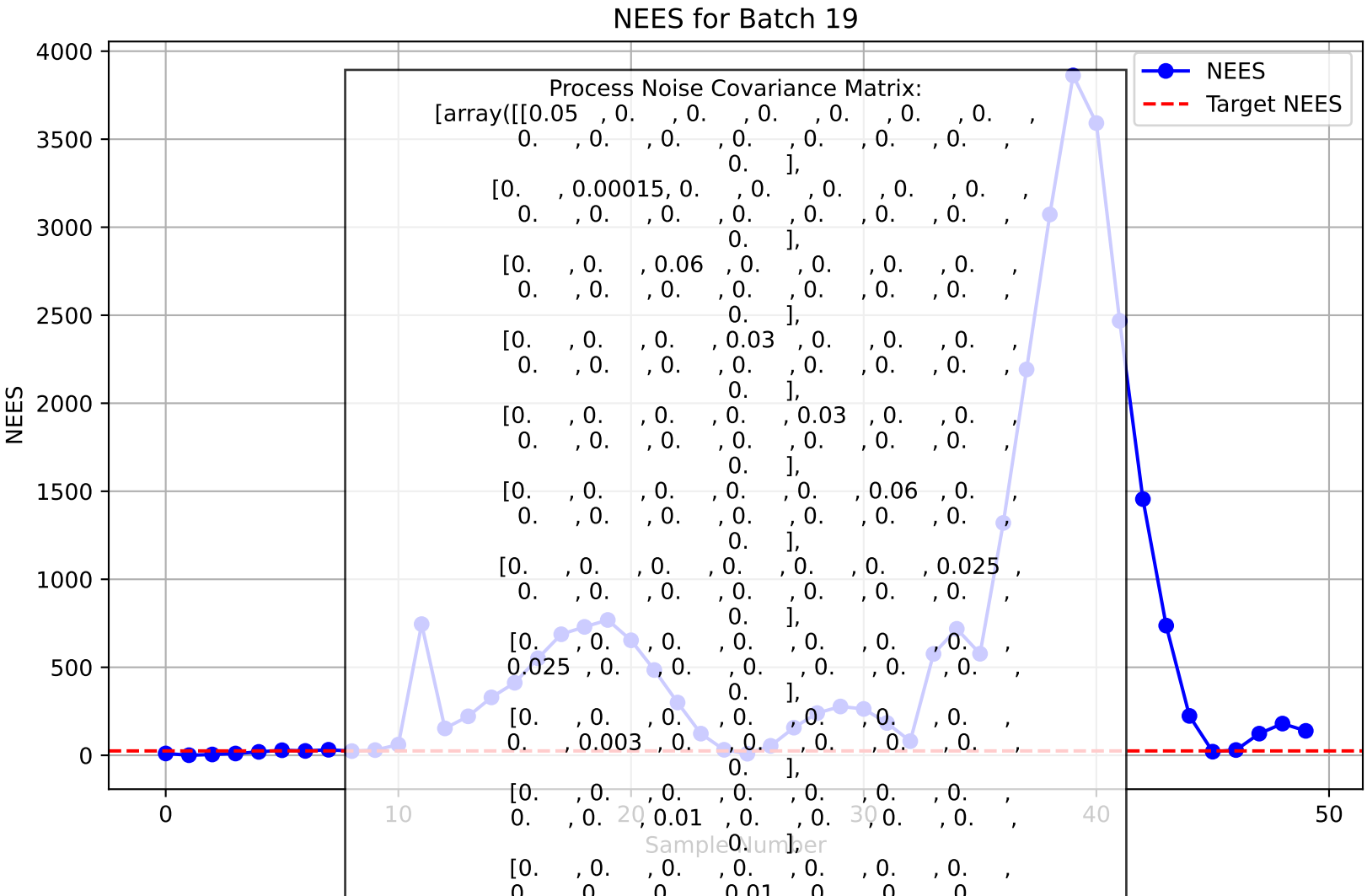

NEES for Batch 14
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
200
400
600
800
0
10
20
30
40
50

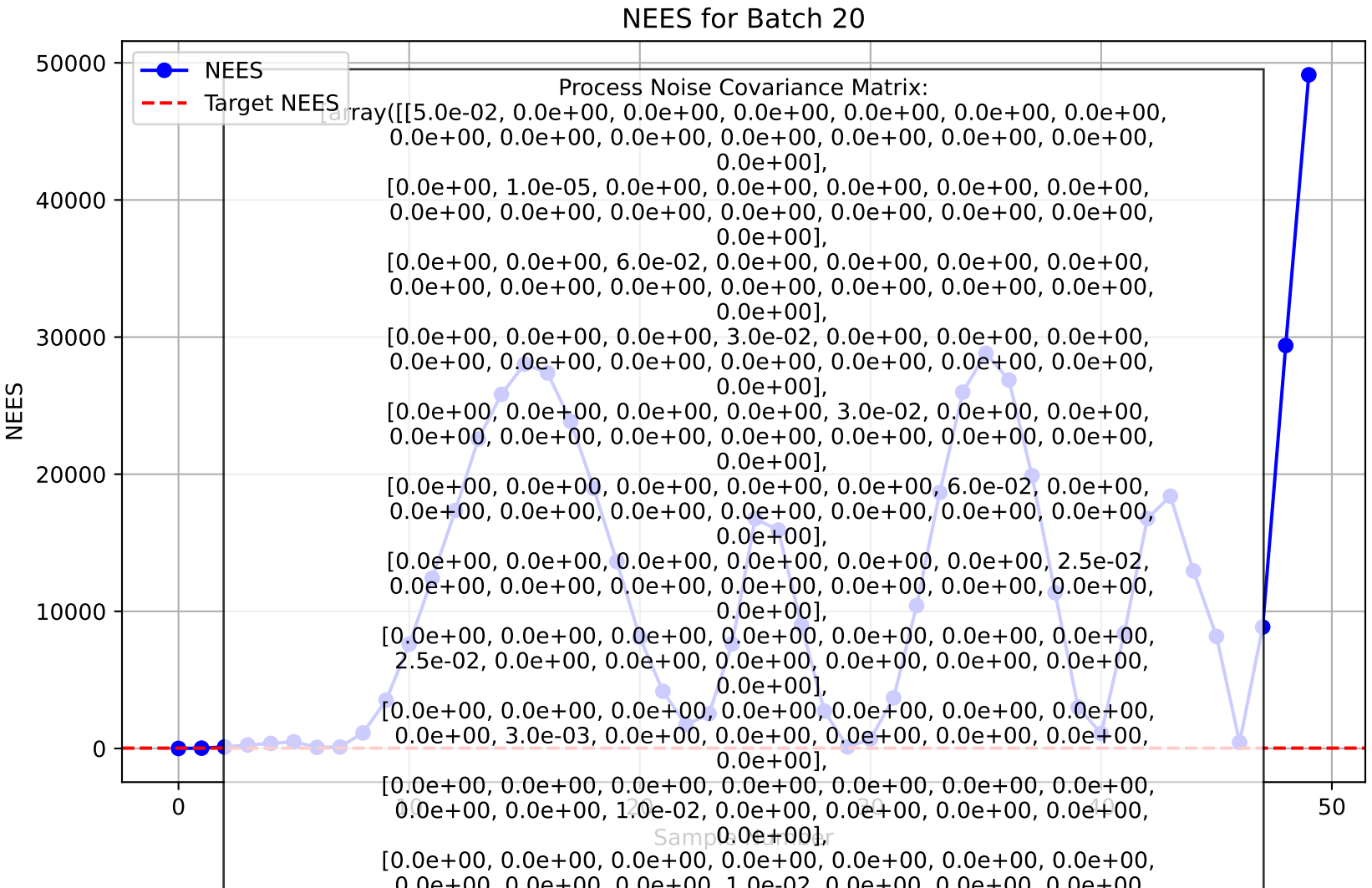

NEES for Batch 15
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.015, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.015, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600

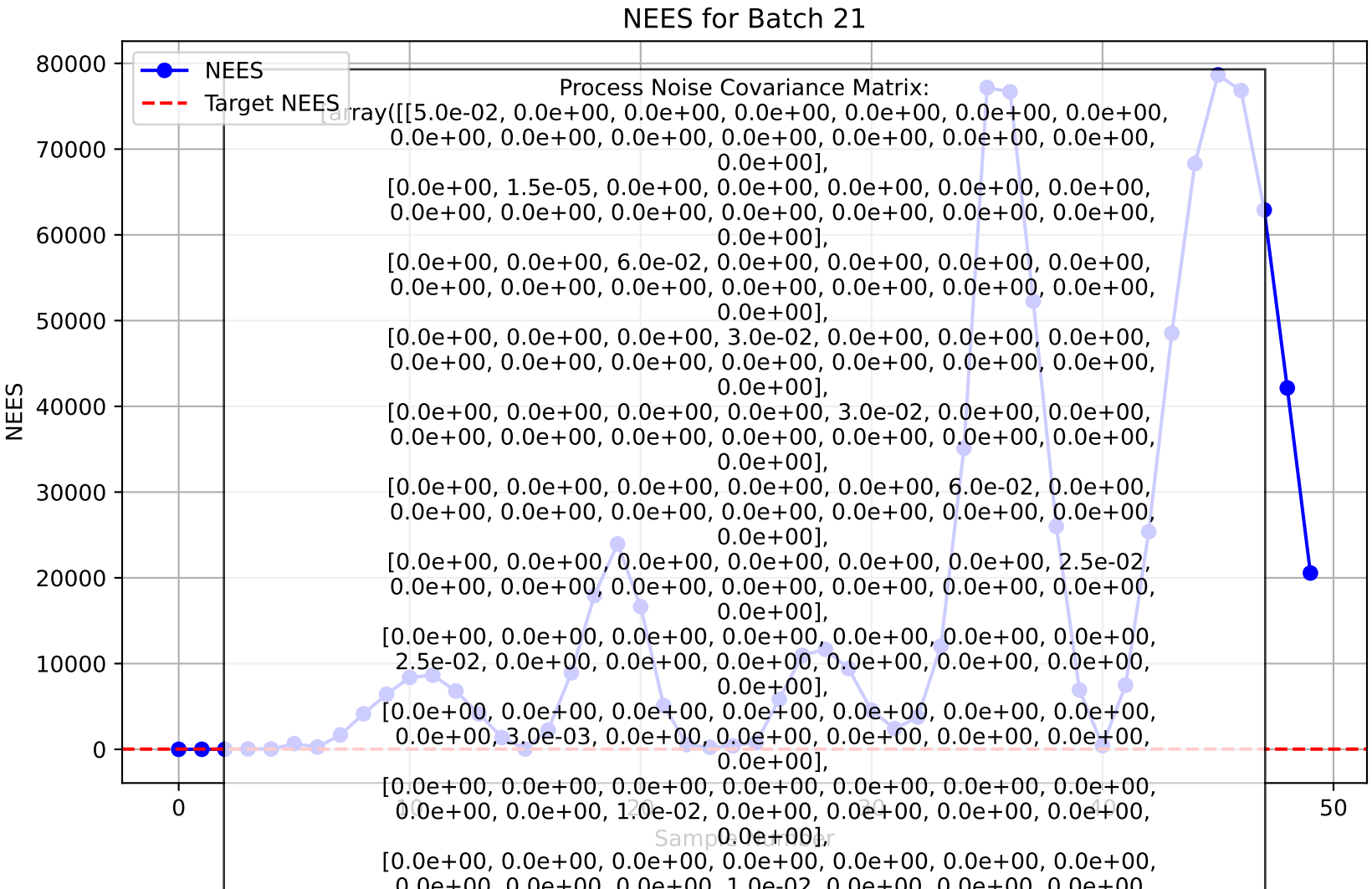

NEES for Batch 16
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
1000
2000
3000
4000
5000
6000
7000
8000
0
10
20
30
40
50


NEES for Batch 17
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.0015, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.0015, 0. , 0. , 0. , 0. , 0. , 0.
0 10 20 30 40 50
0 100 200 300 400 500 600


NEES for Batch 18
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.0001, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.0001, 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
5000
4000
3000
2000
1000
0
0
10
20
30
40
50
Sample Index


NEES for Batch 19
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.00015, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.003 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Sample Number
4000
3500
3000
2500
2000
1500
1000
500
0
0
10
20
30
40
50


NEES for Batch 20
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 1.0e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
50000
40000
30000
20000
10000
0
0
50


NEES for Batch 21
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 1.5e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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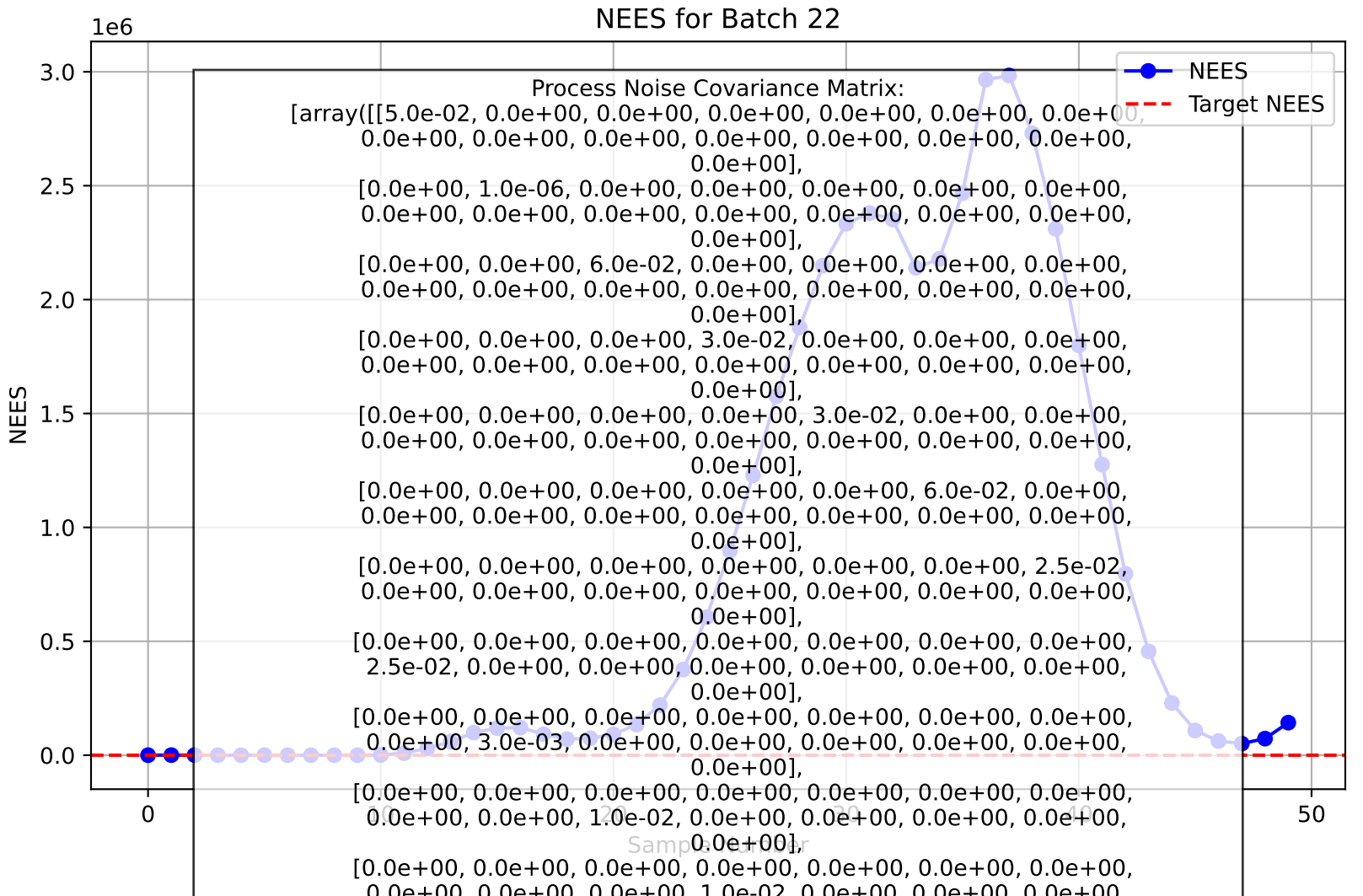
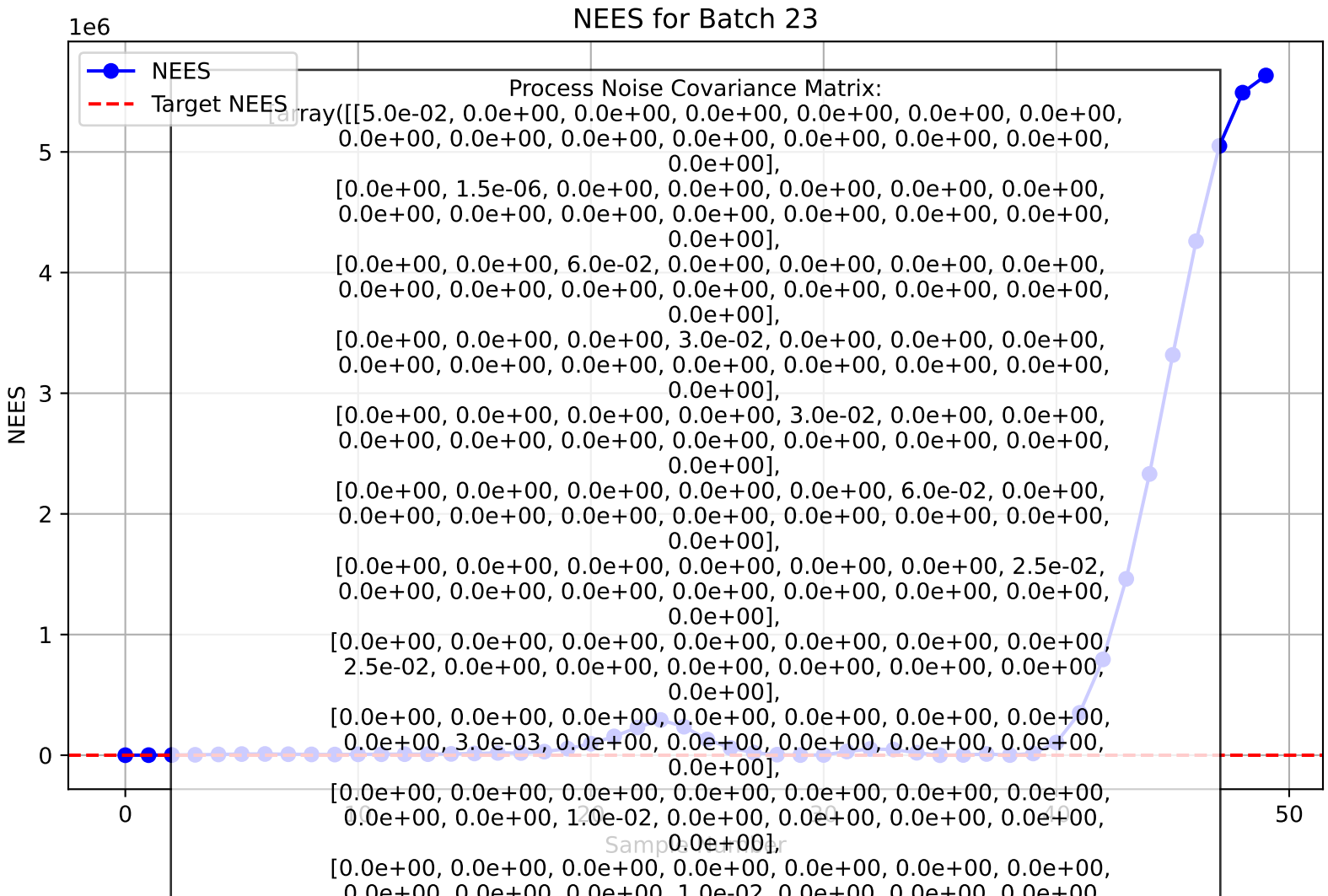
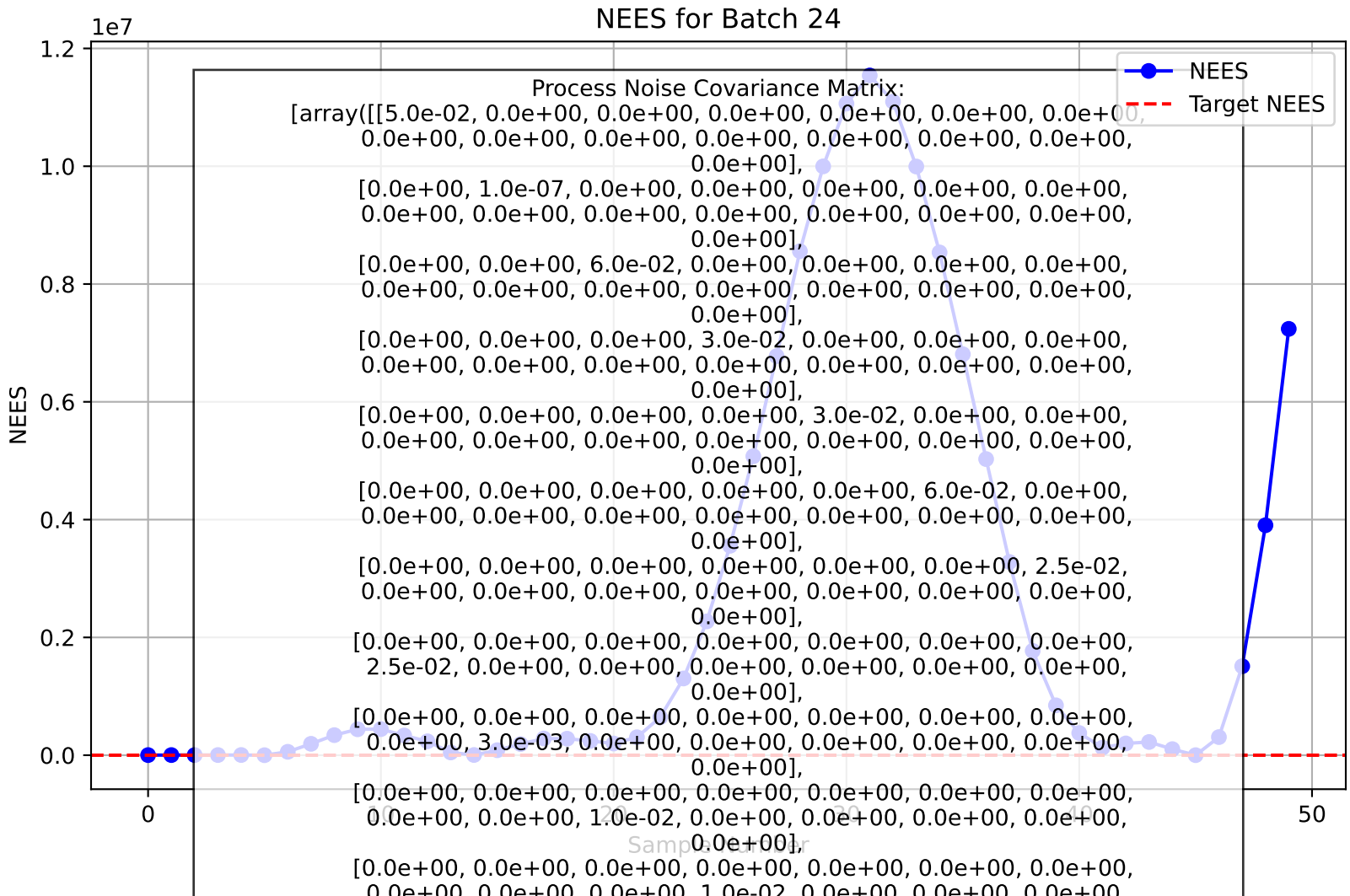
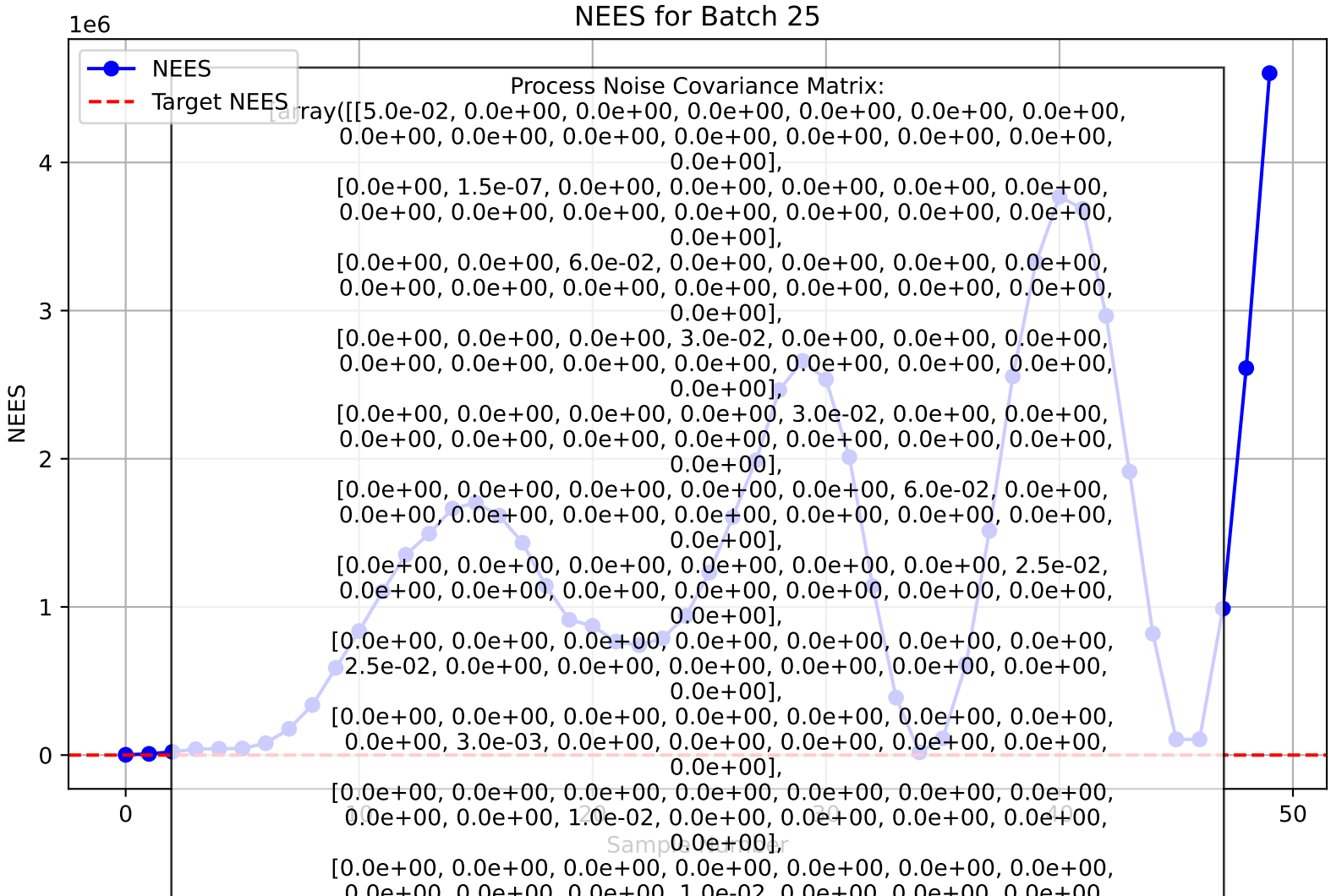
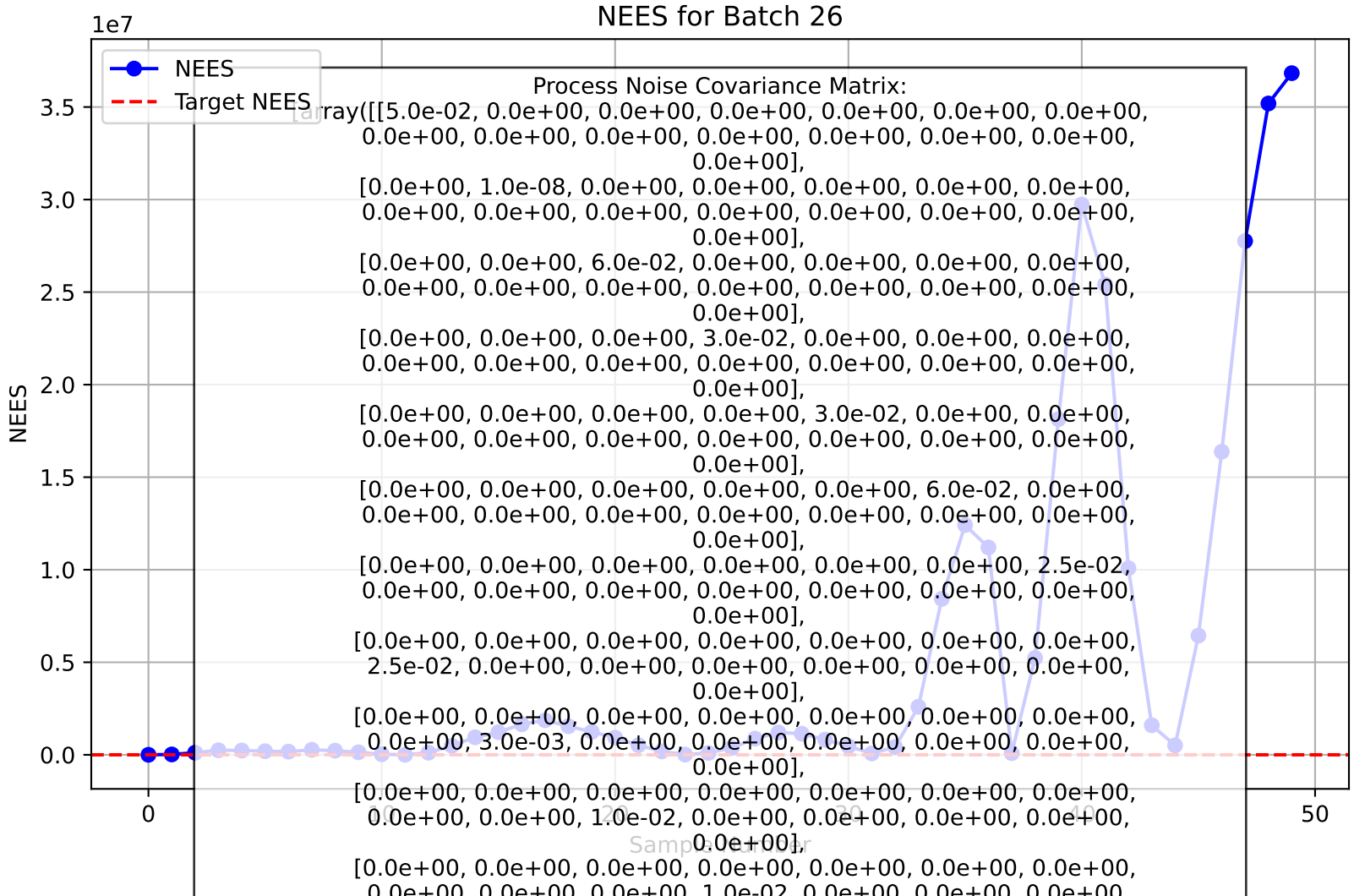
70000
60000
50000
40000
30000
20000
10000
0
0
50

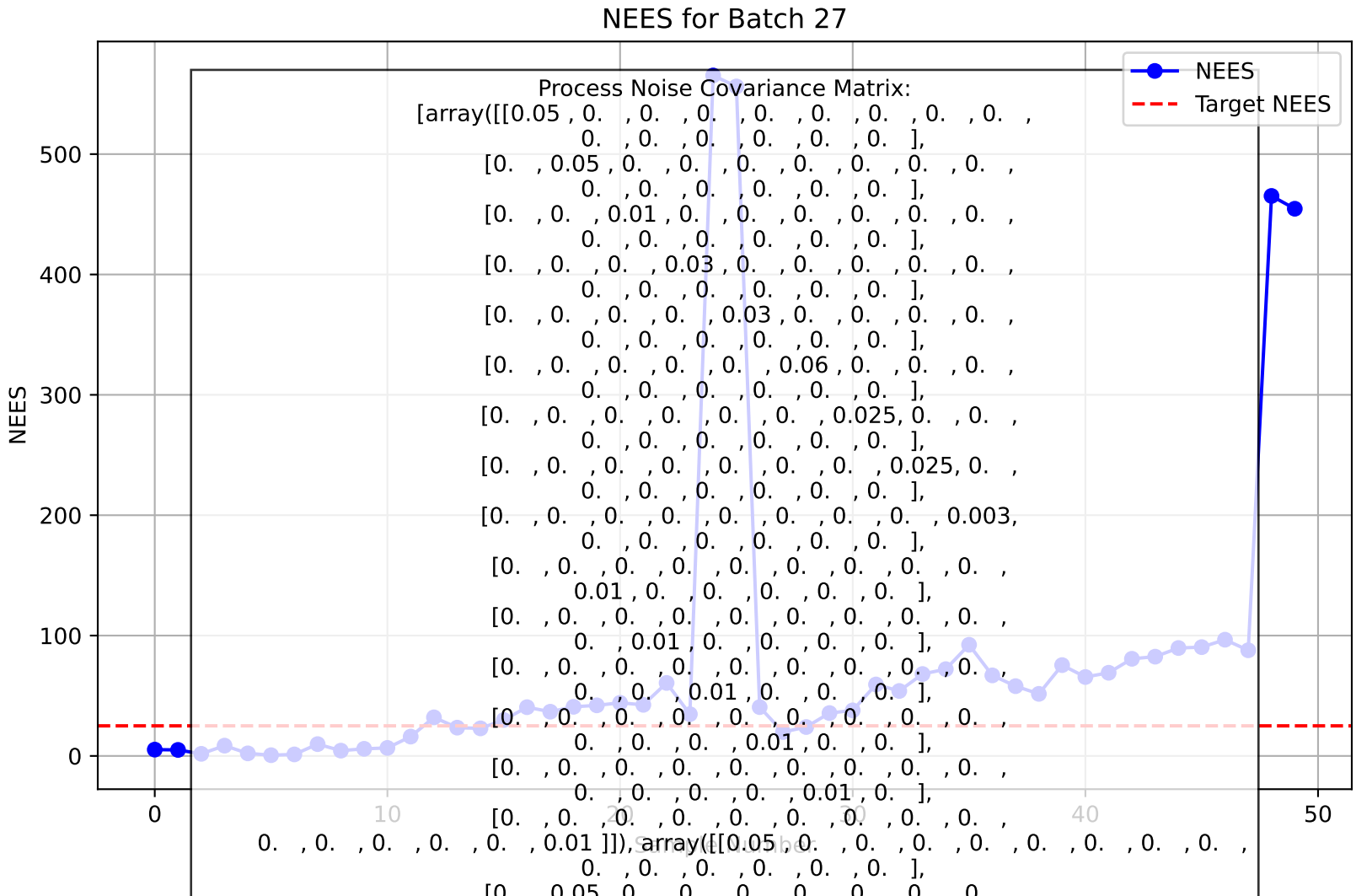

NEES for Batch 22
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 1.0e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
50

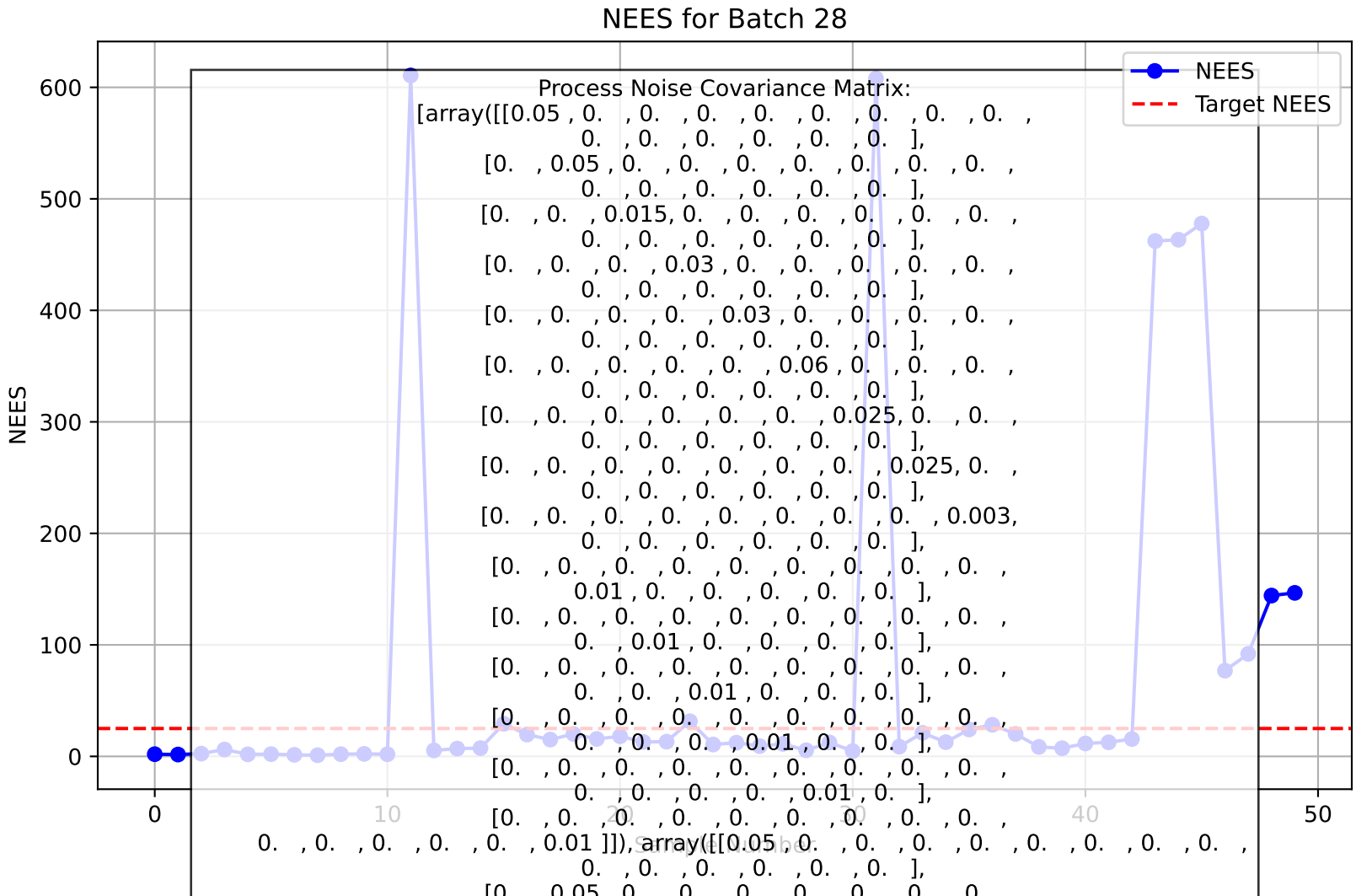

NEES for Batch 23
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 1.5e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
0
1
2
3
4
5
0
50

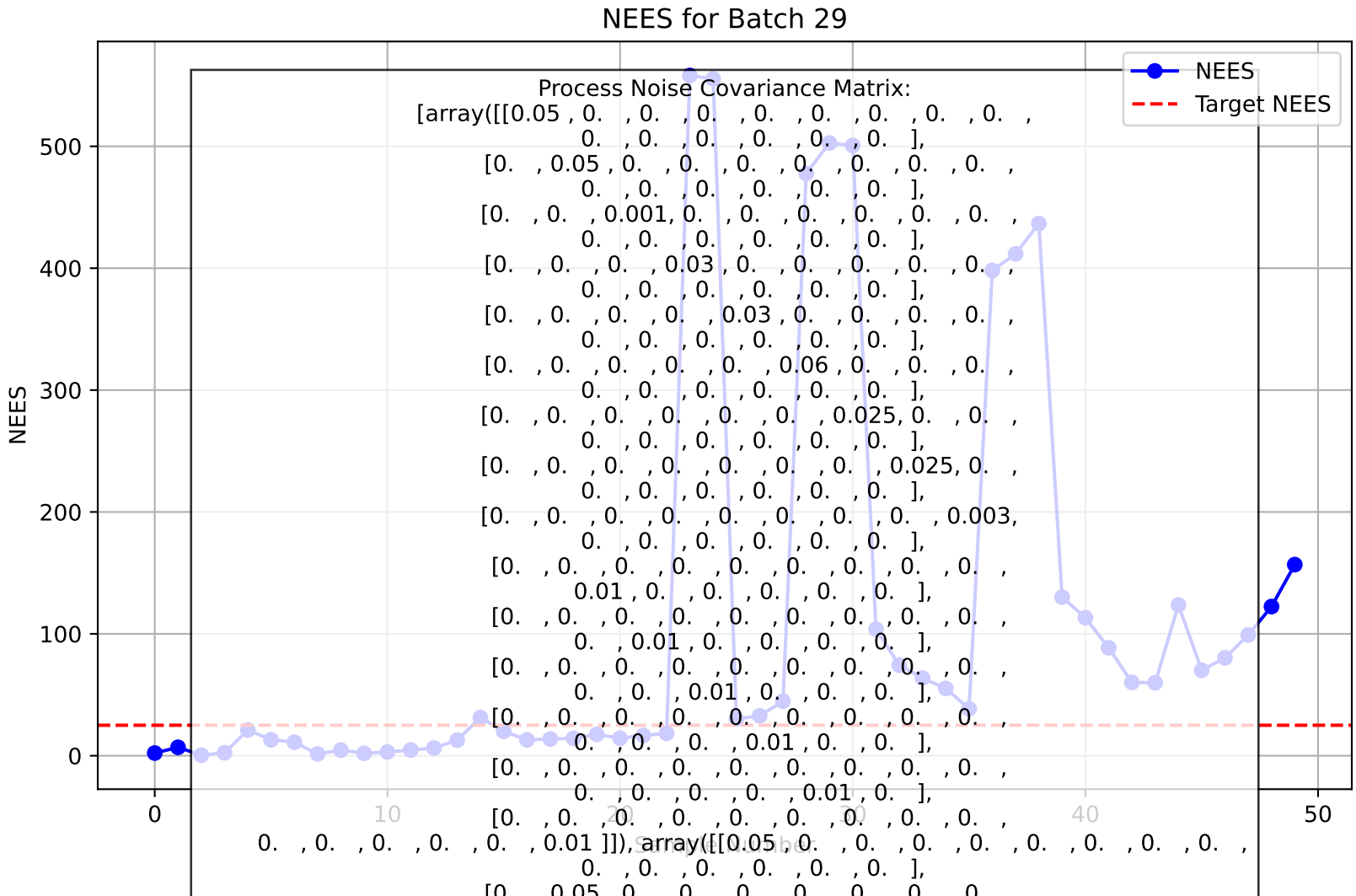

NEES for Batch 24
1e7
1.2
1.0
0.8
0.6
0.4
0.2
0.0
NEES
0
50
Sample Number
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 1.0e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

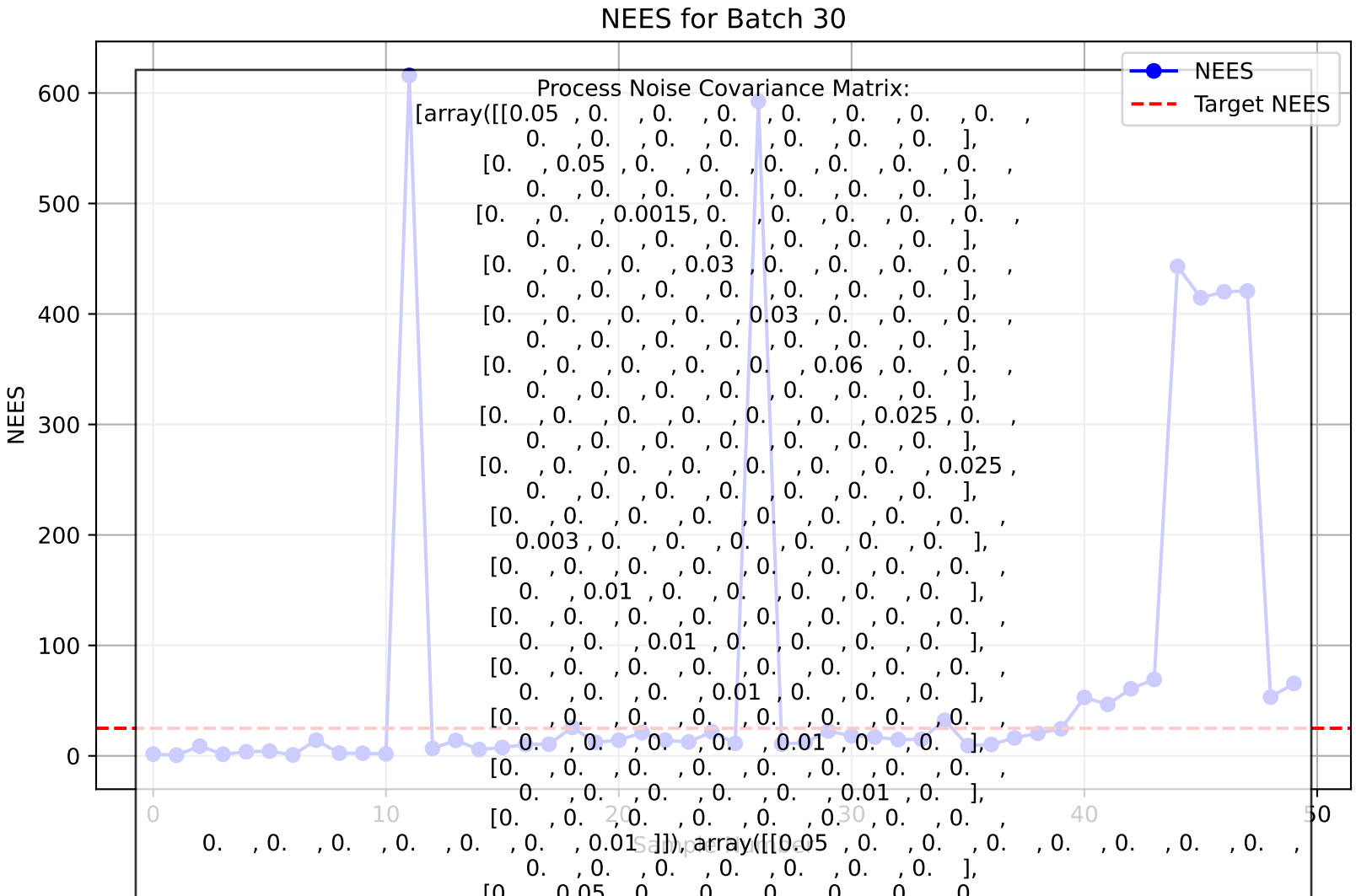

NEES for Batch 25
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 1.5e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
1
2
3
4
0
50

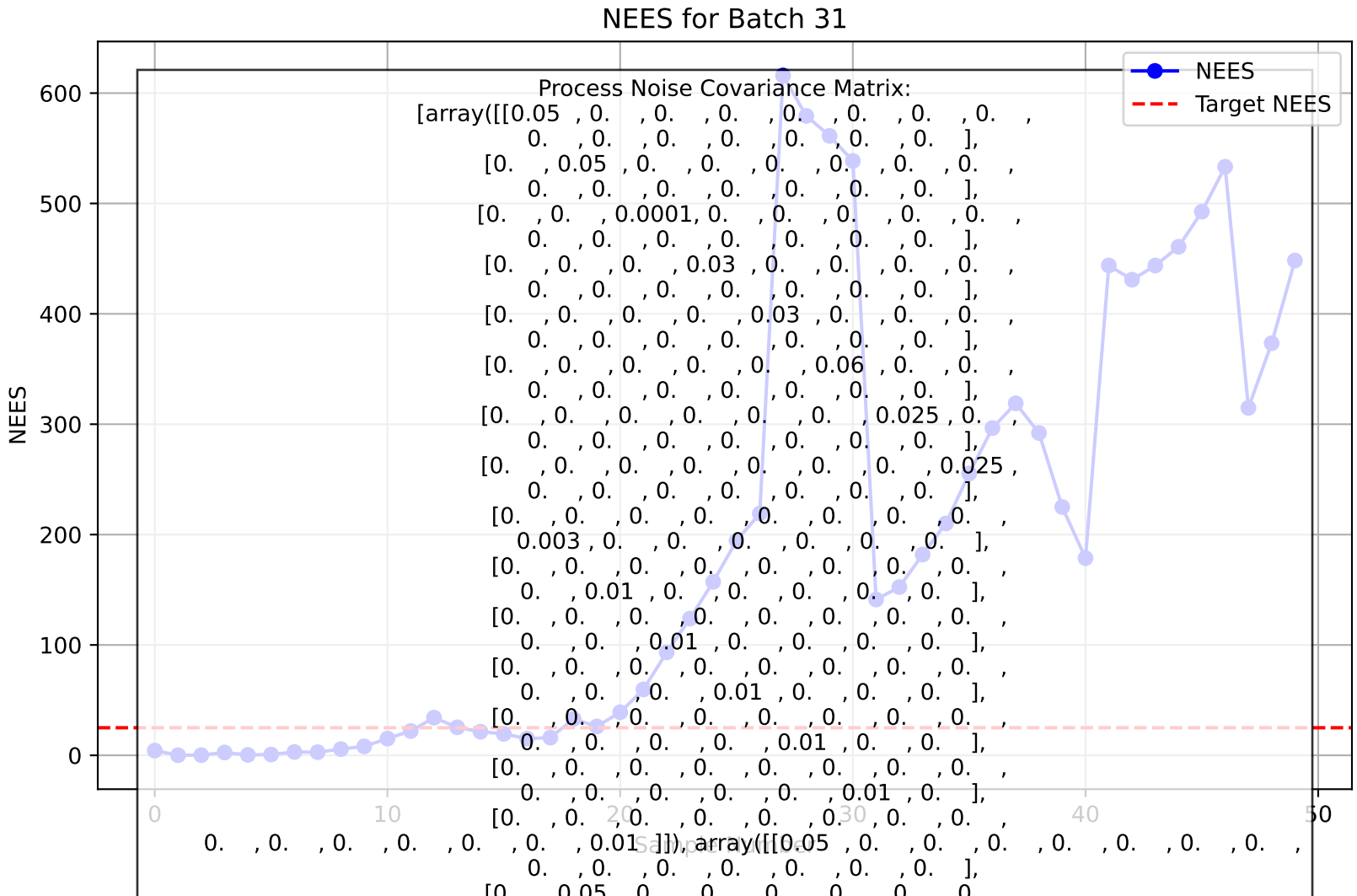

NEES for Batch 26
1e7
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 1.0e-08, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
50

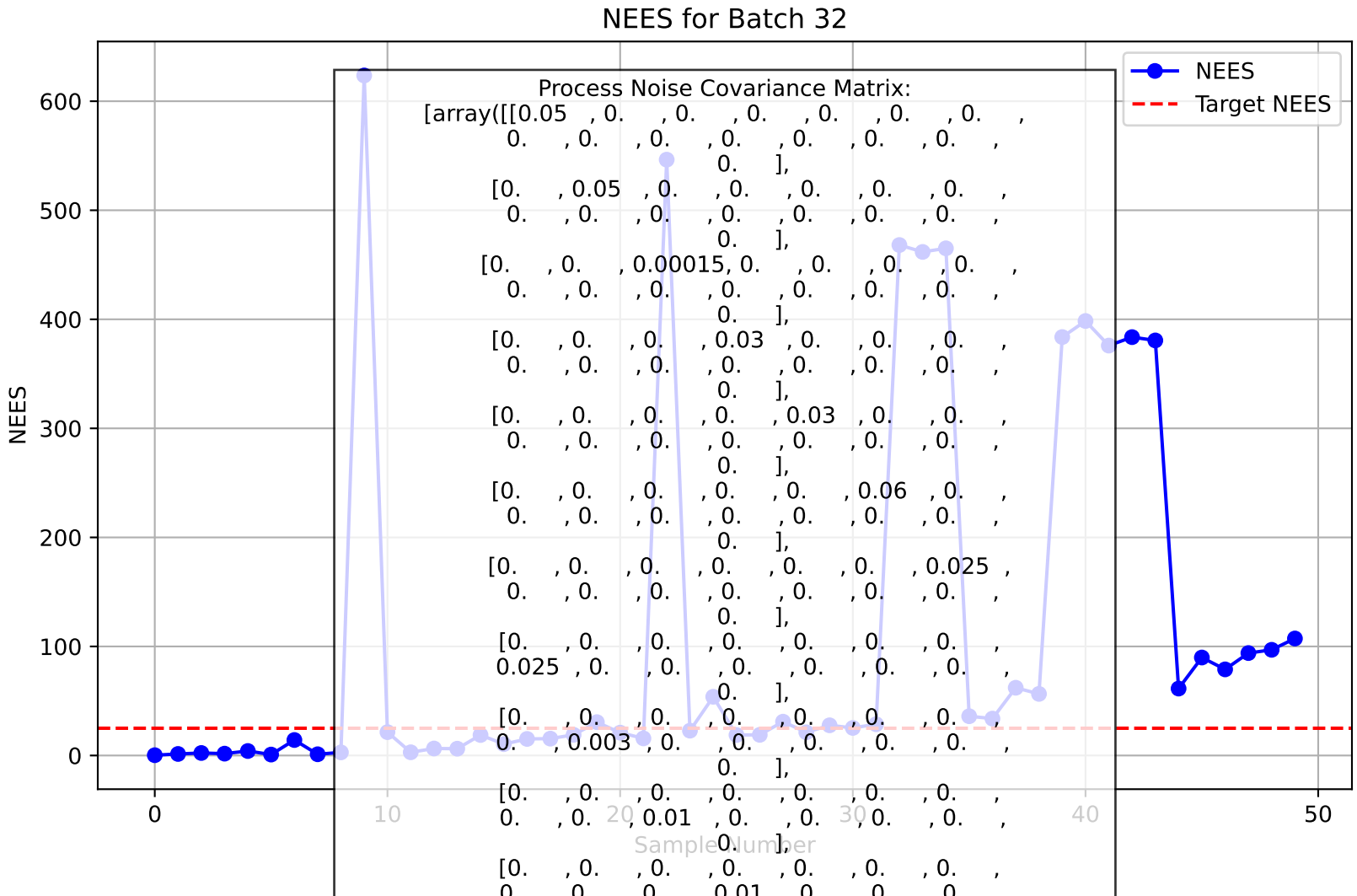

NEES for Batch 27
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
500
0
10
20
30
40
50

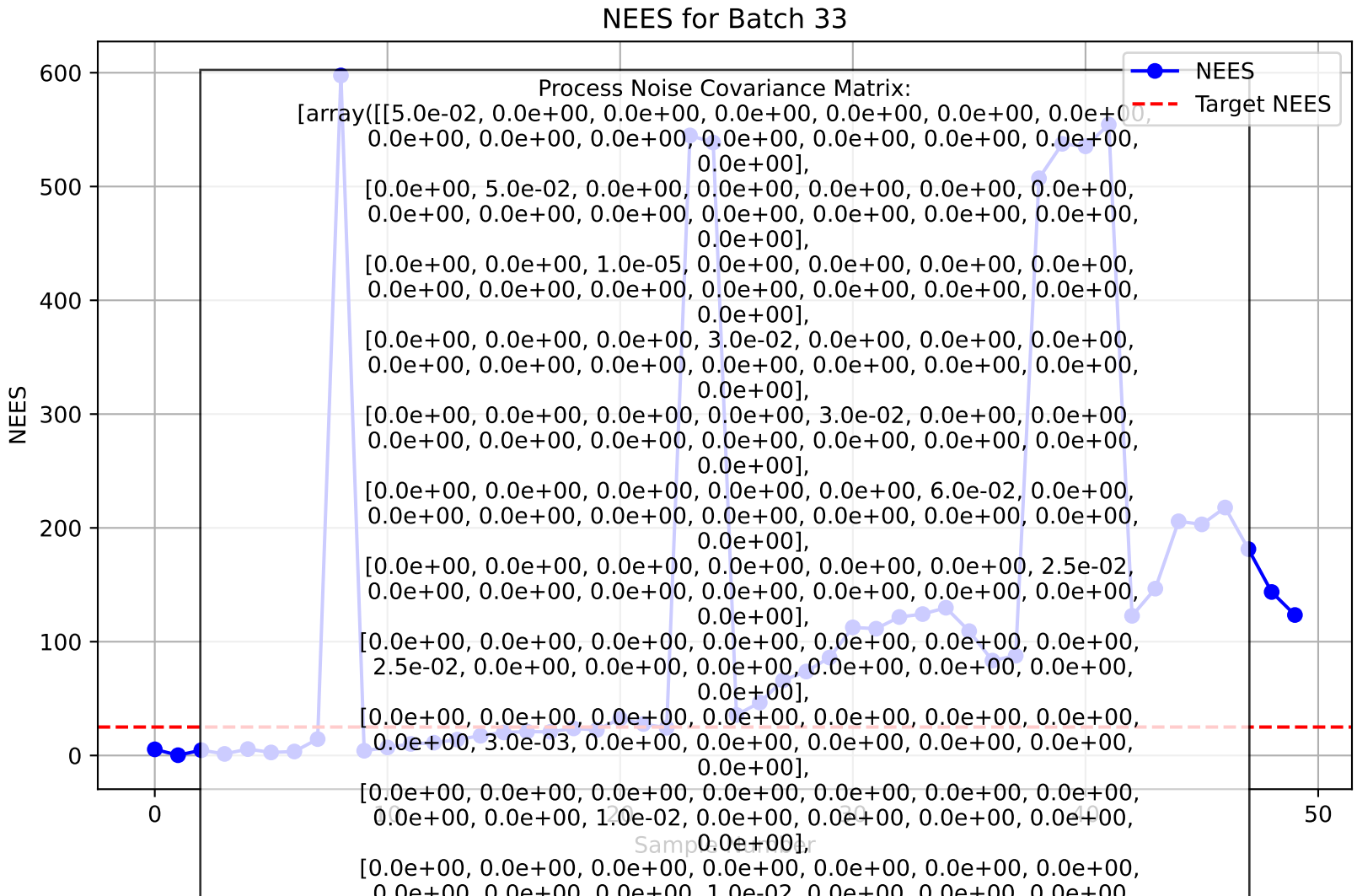

NEES for Batch 28
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.015, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
600
500
400
300
200
100
0
0
10
20
30
40
50

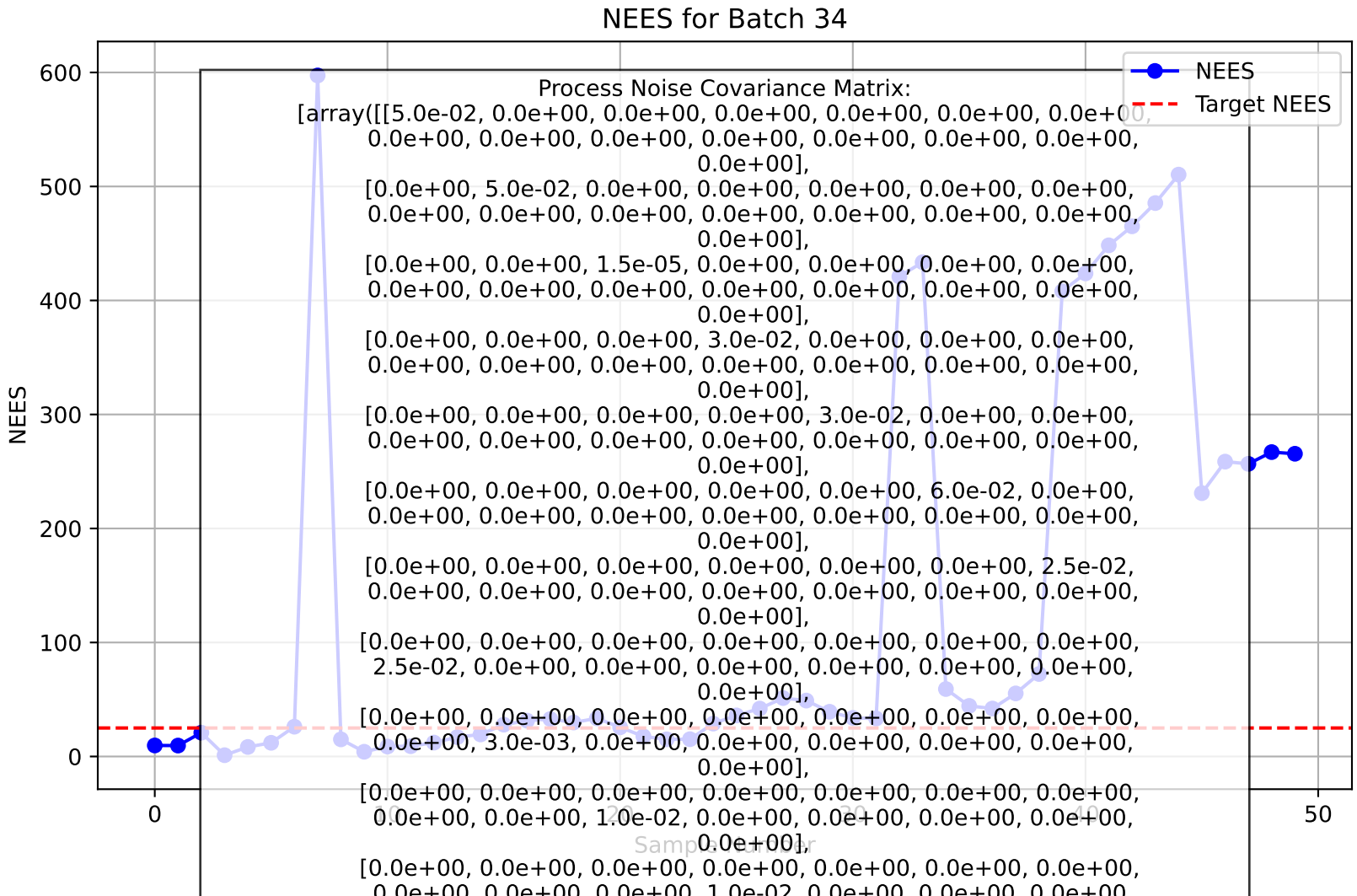

NEES for Batch 29
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
0
100
200
300
400
500
0
10
20
30
40
50

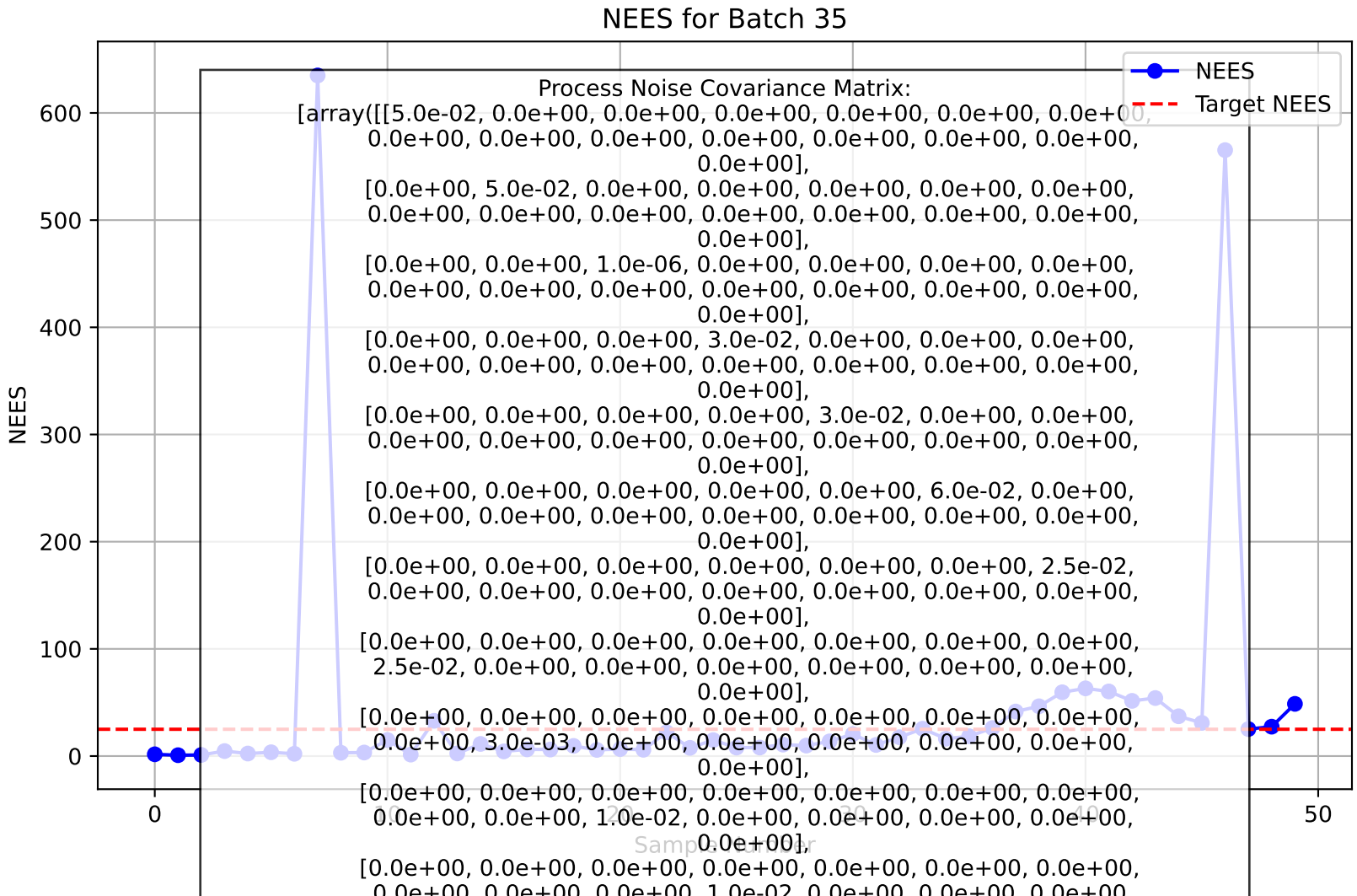

NEES for Batch 30
NEES
Target NEES
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.0015, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.

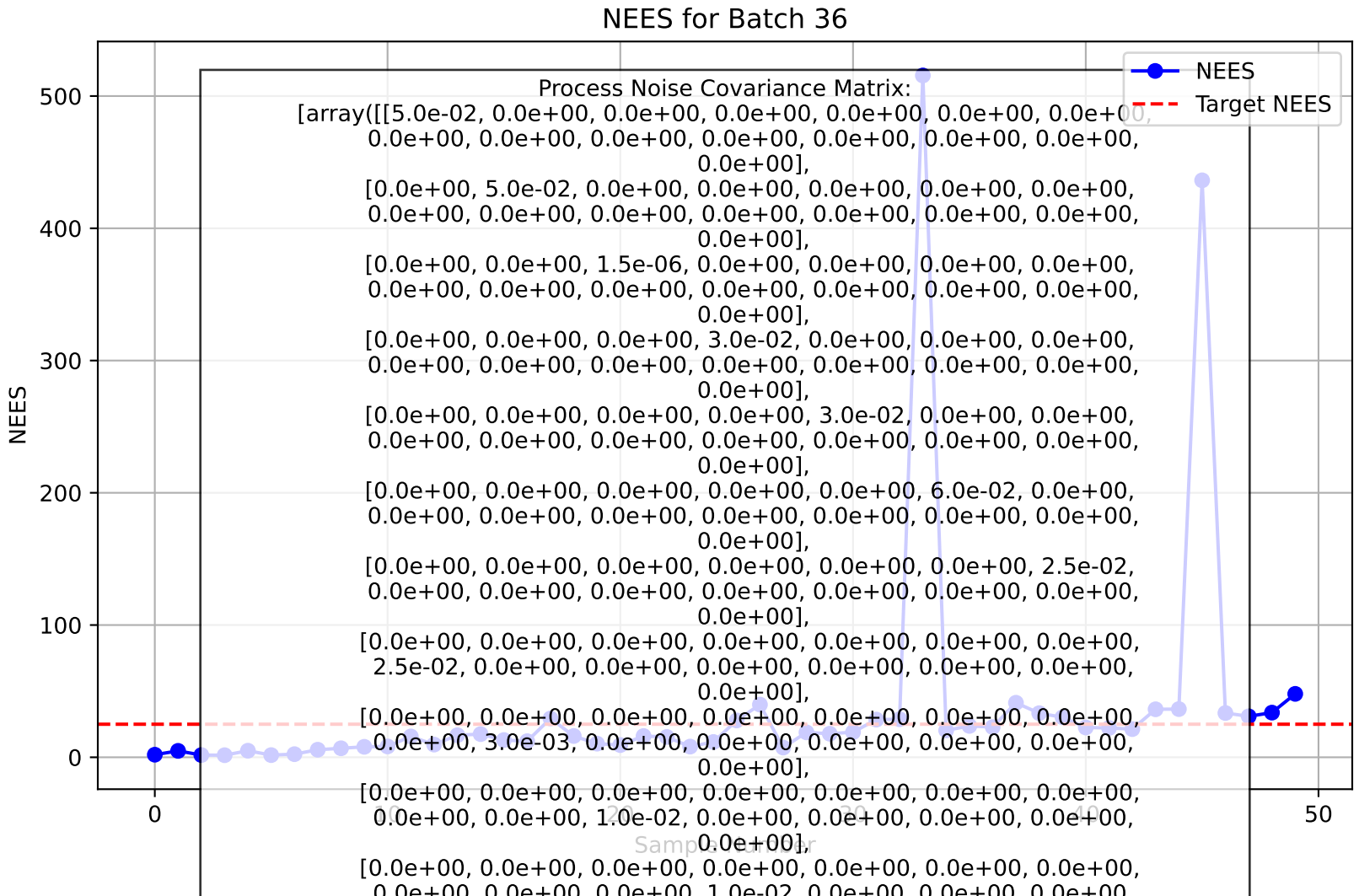

NEES for Batch 31
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.0001, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.
NEES
Batch Number
0
100
200
300
400
500
600
0
10
20
30
40
50

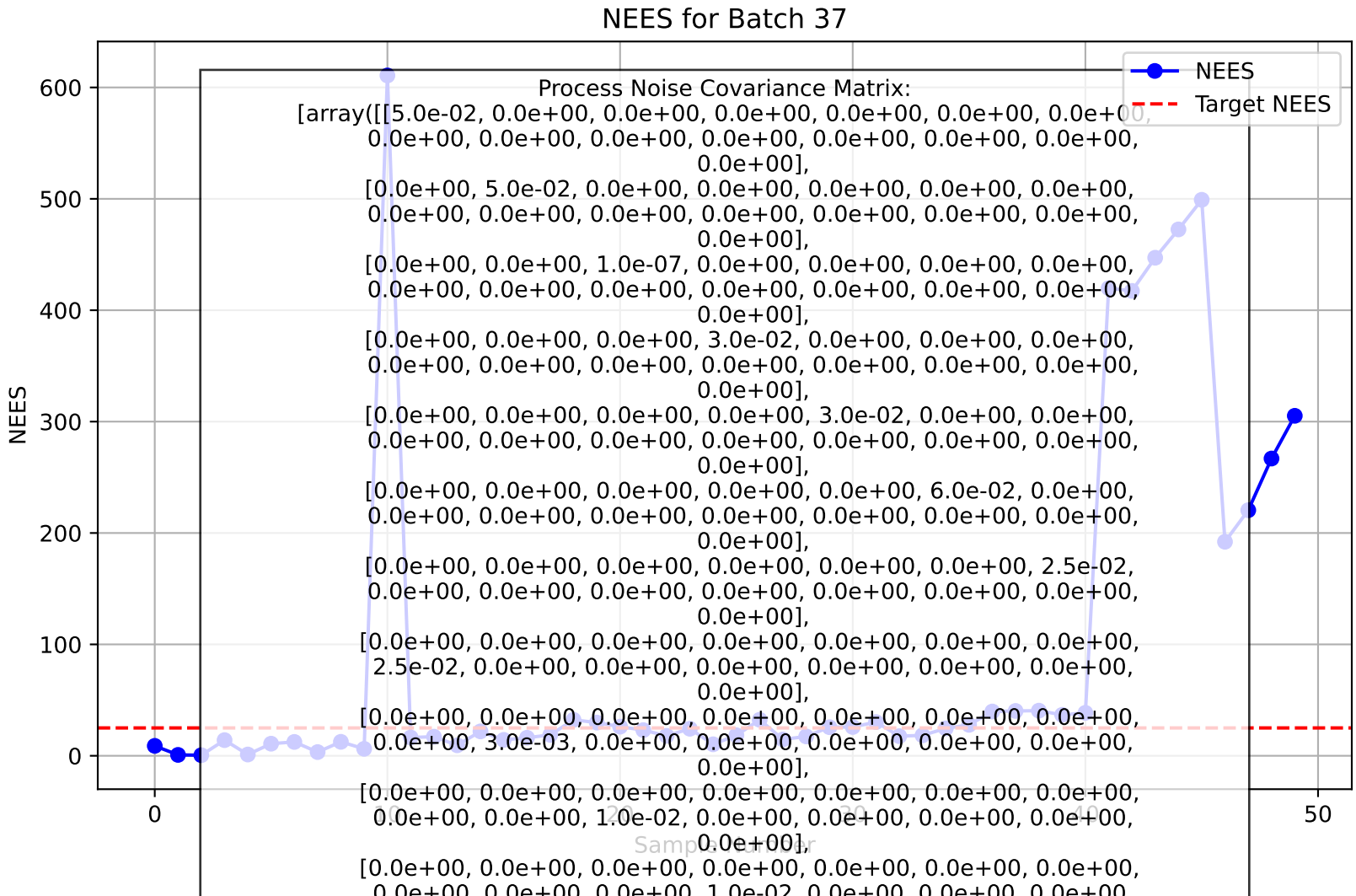

NEES for Batch 32
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.00015, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.003 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50

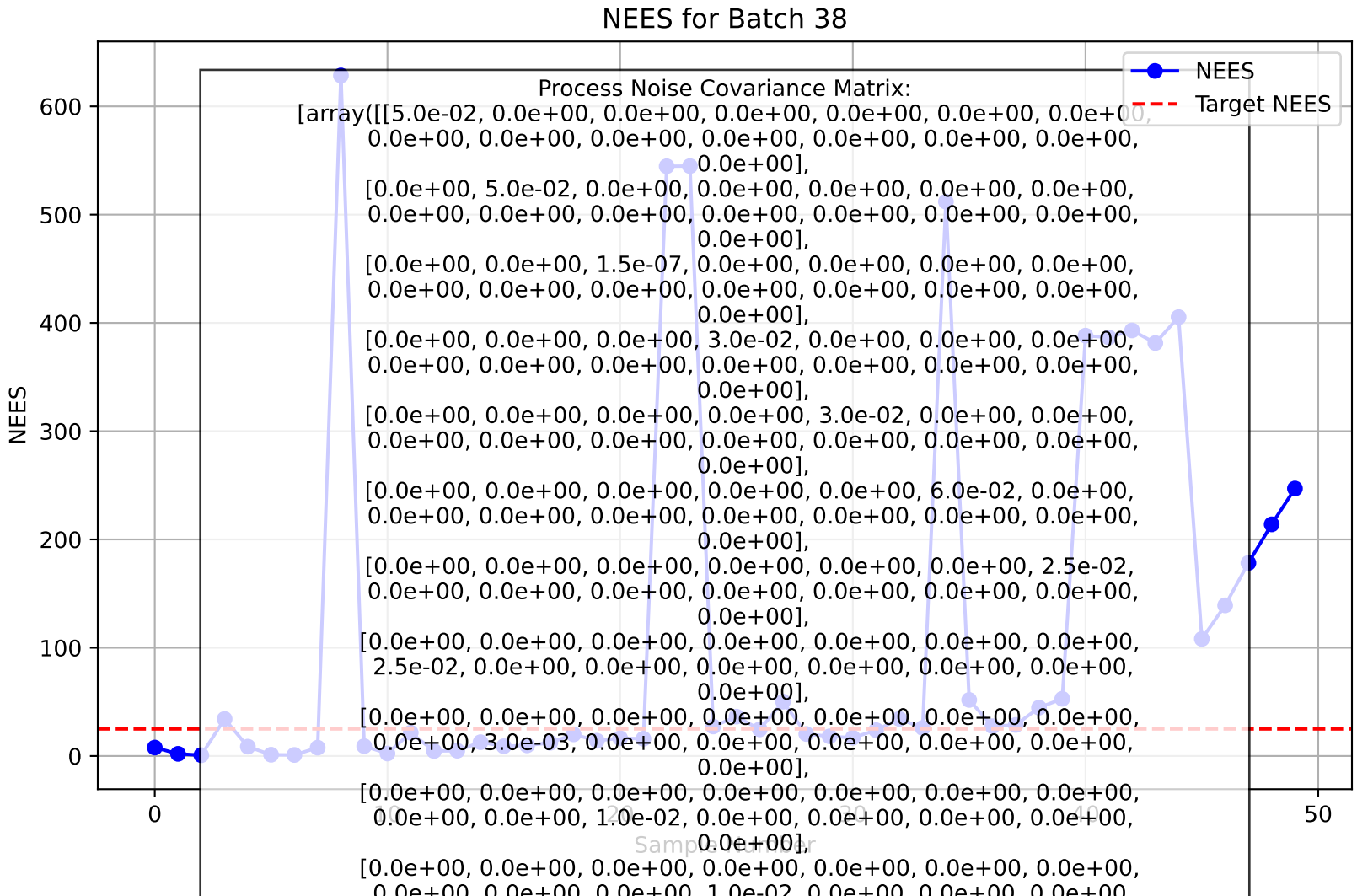

NEES for Batch 33
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
600
500
400
300
200
100
0
0
50

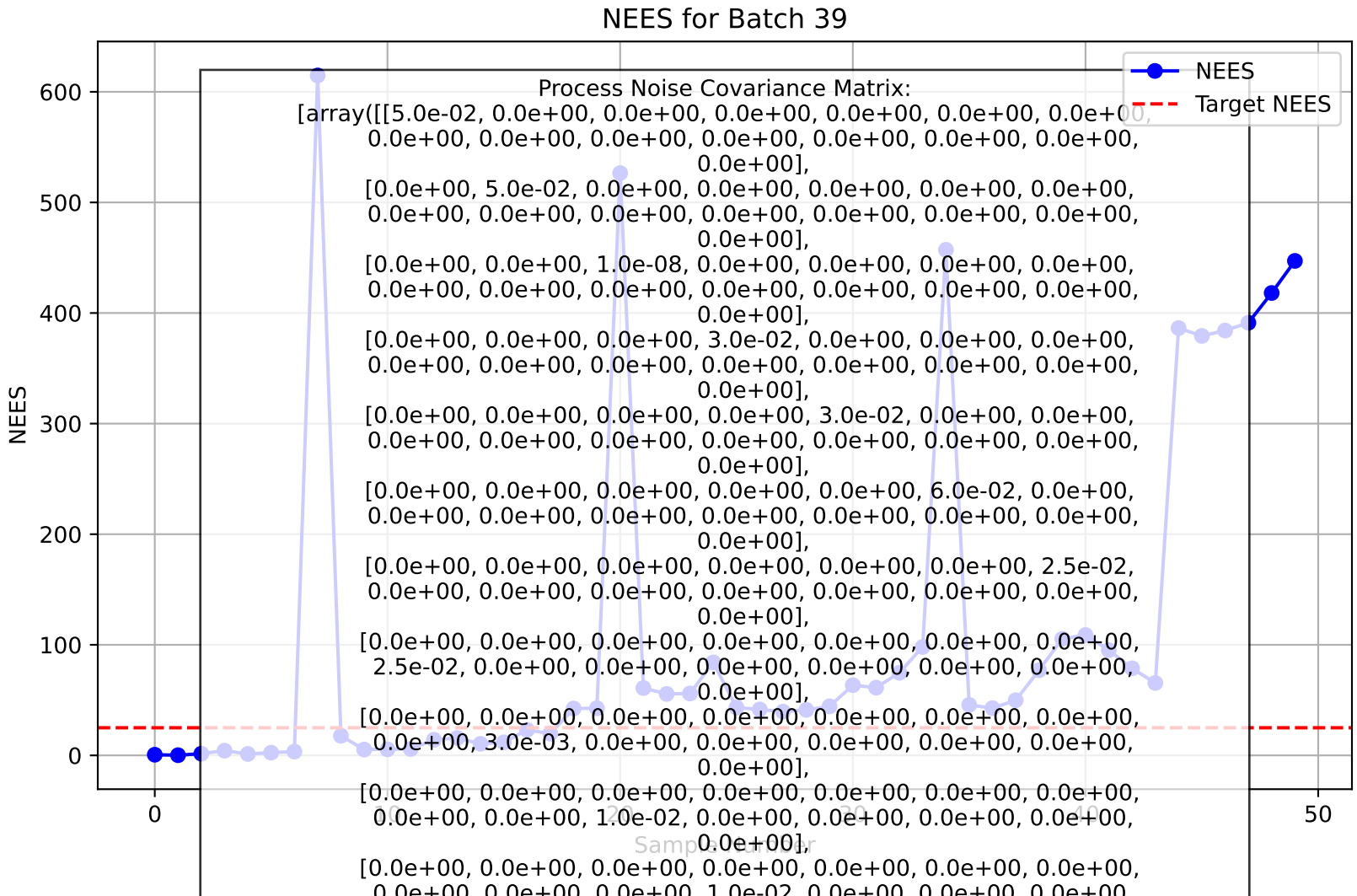

NEES for Batch 34
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.5e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
600
500
400
300
200
100
0
0
50


NEES for Batch 35
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50


NEES for Batch 36
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.5e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50


NEES for Batch 37
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50


NEES for Batch 38
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.5e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50


NEES for Batch 39
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-08, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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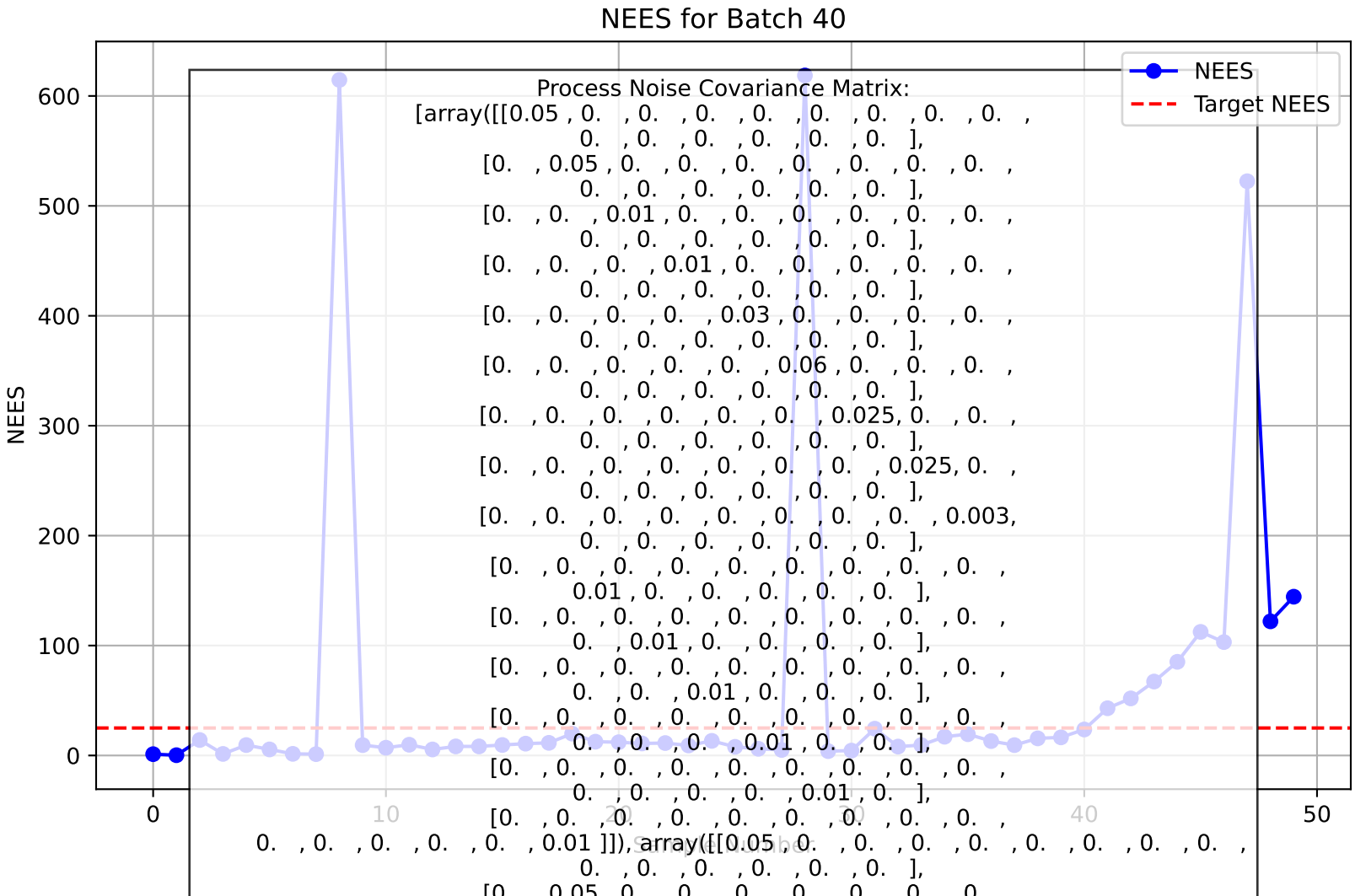
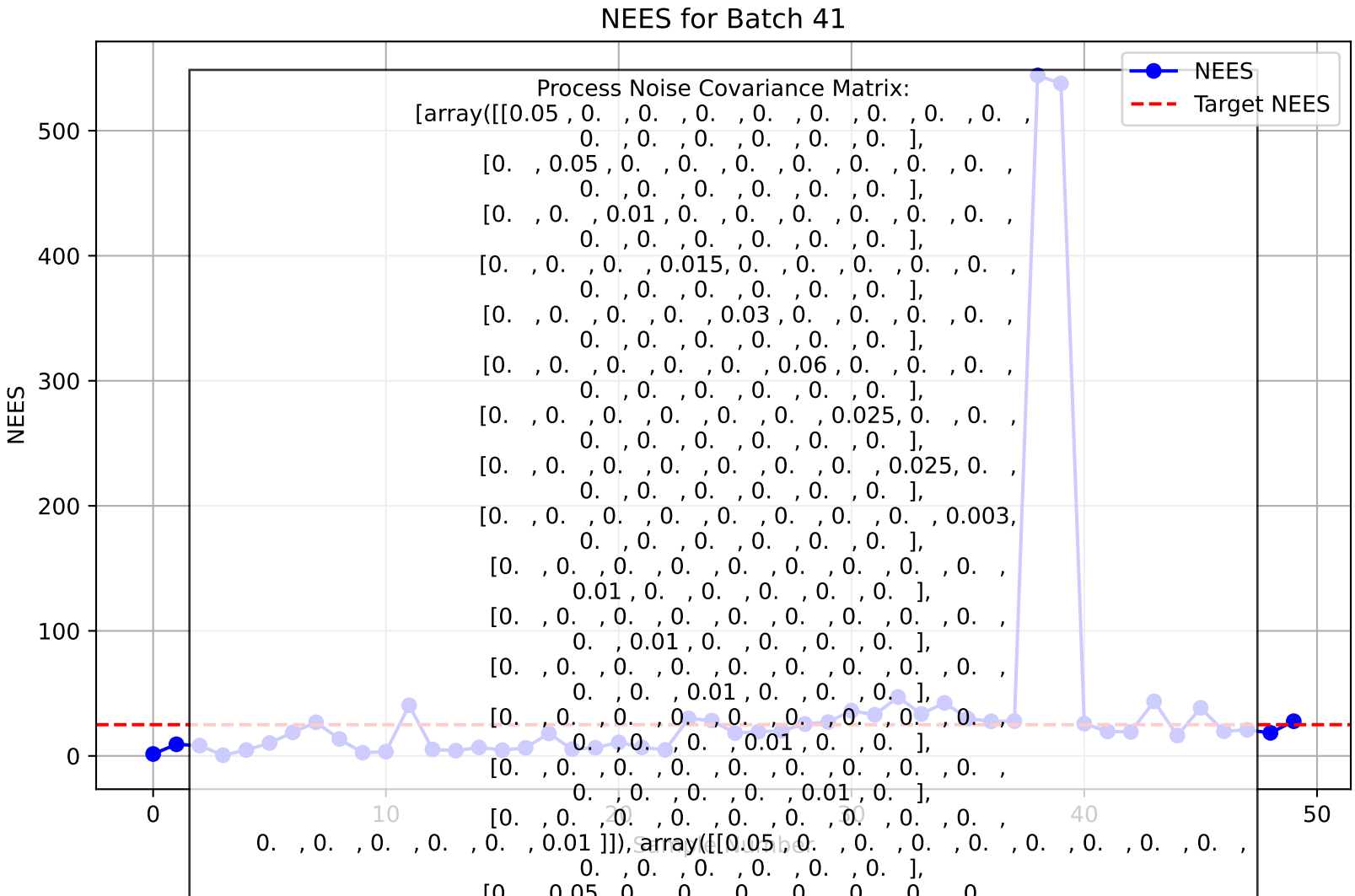
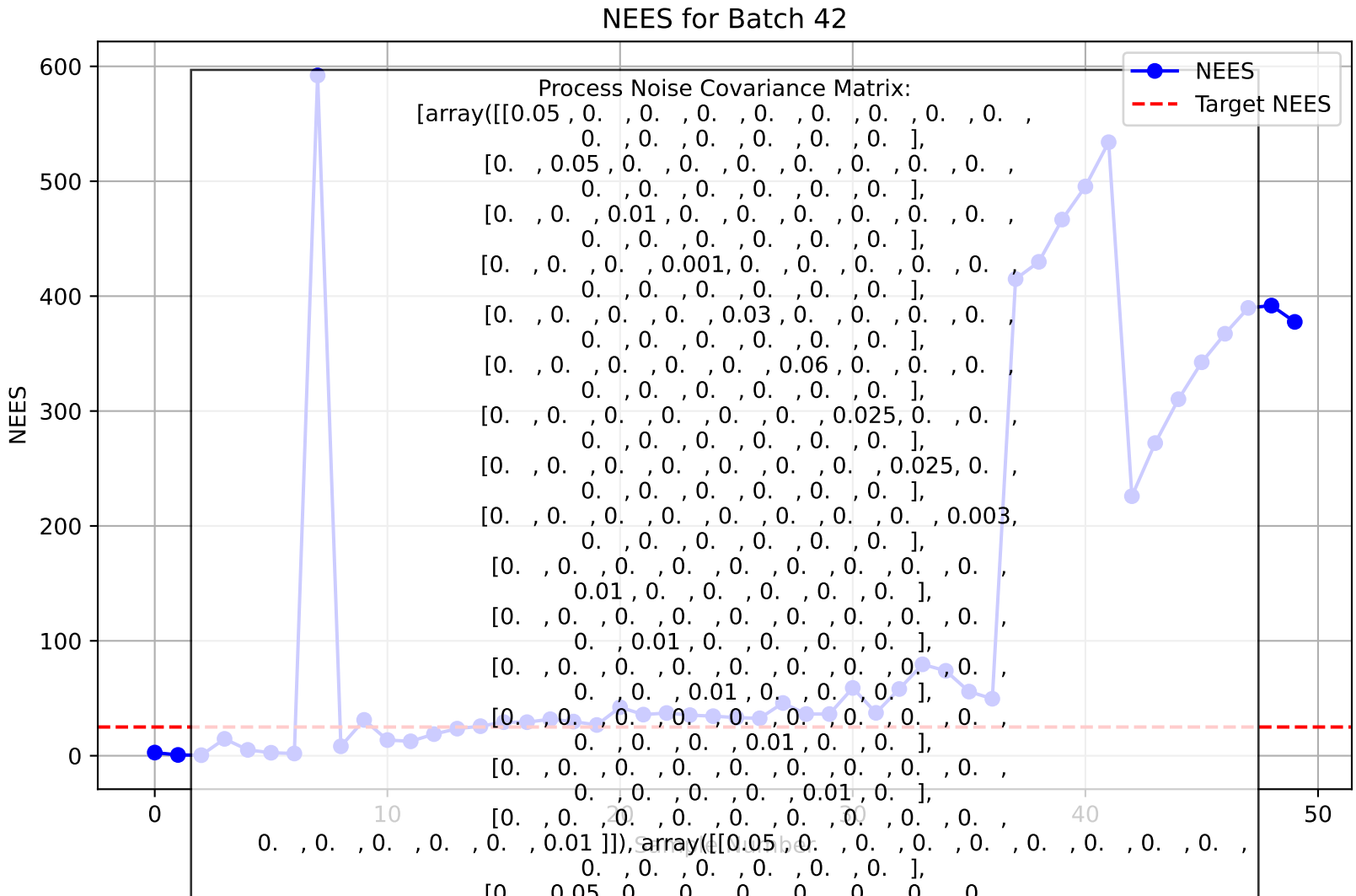
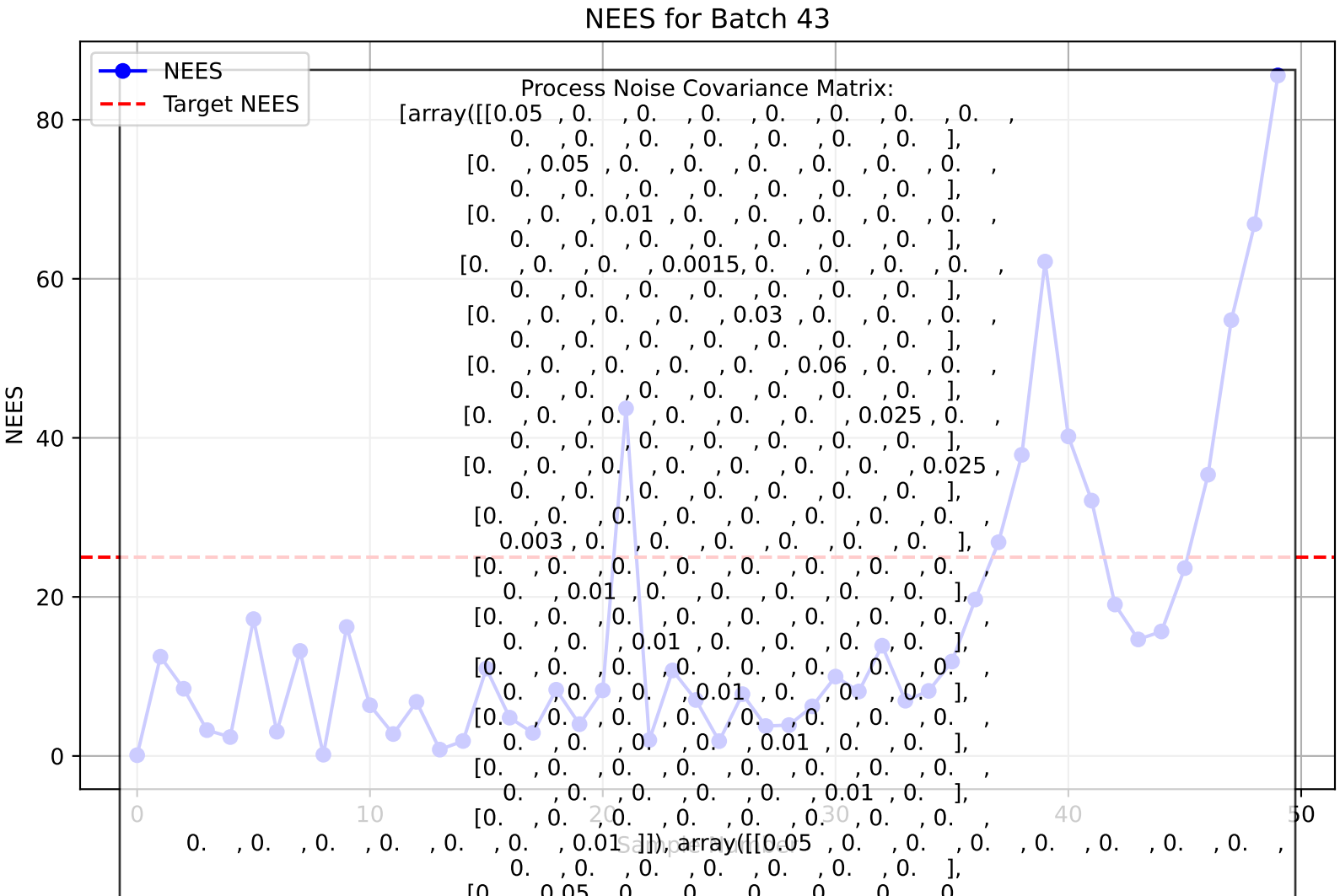
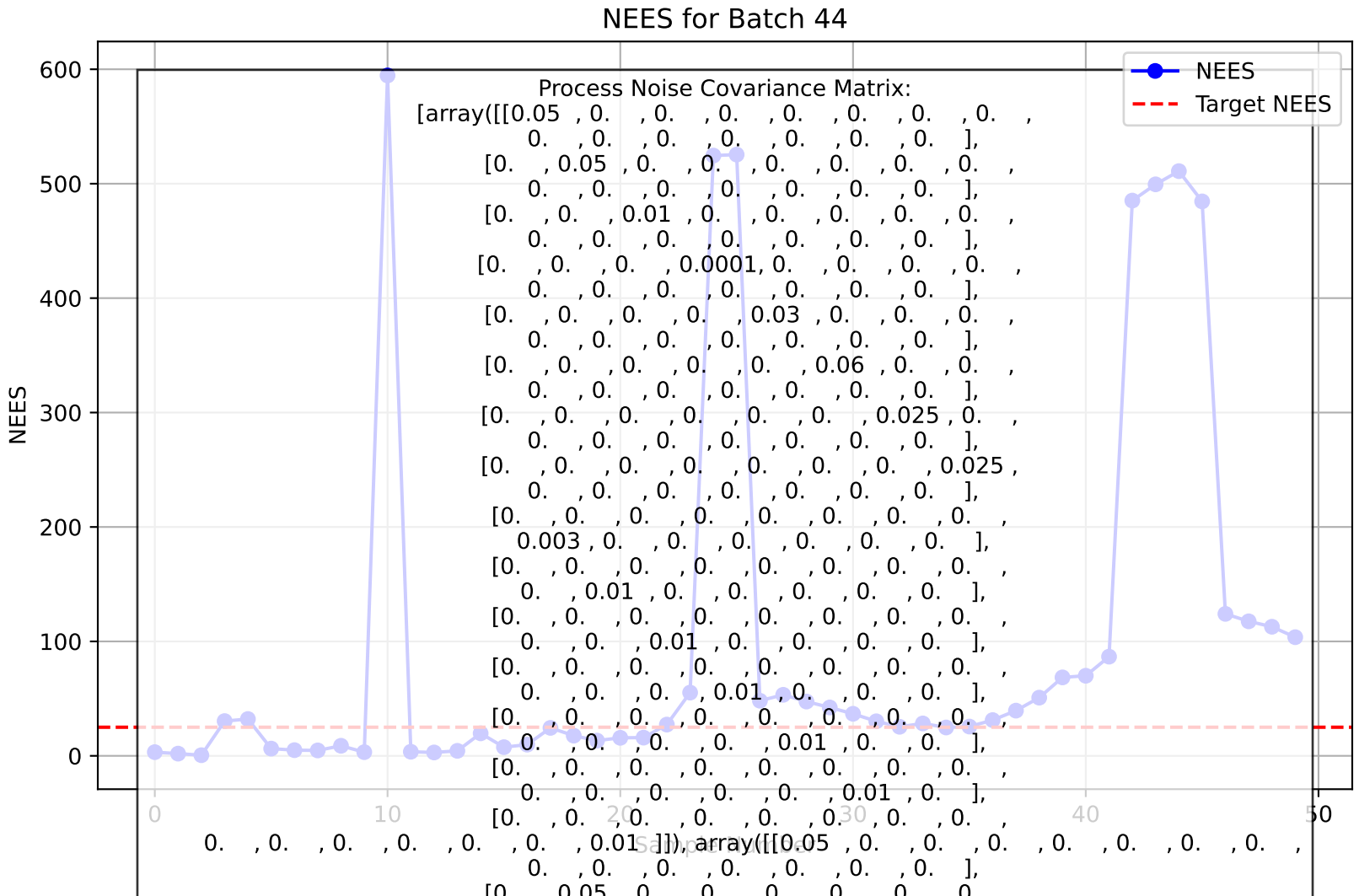
100
200
300
400
500
600
0
50

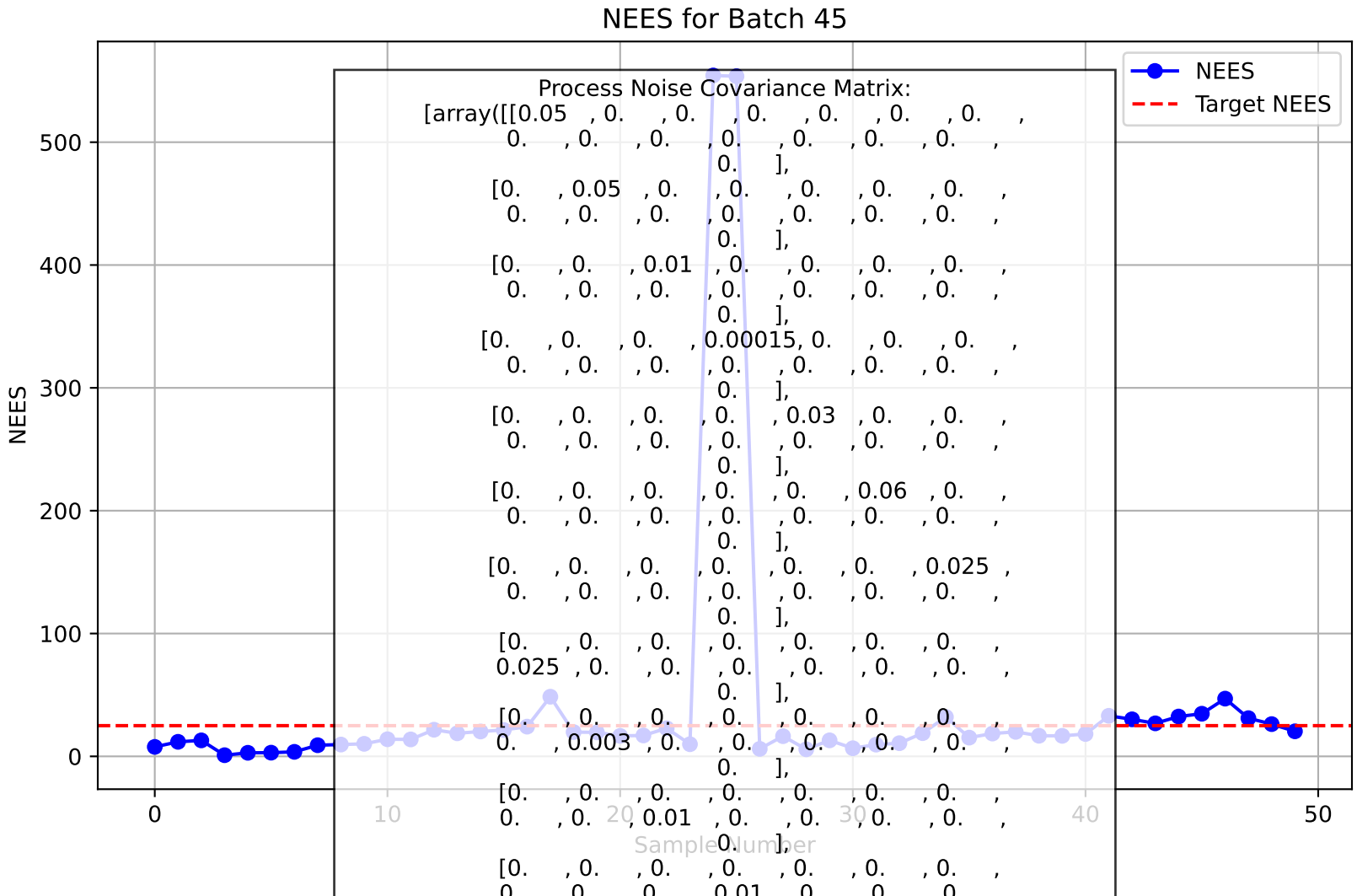

NEES for Batch 40
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Batch Number
0
100
200
300
400
500
600
0
10
20
30
40
50

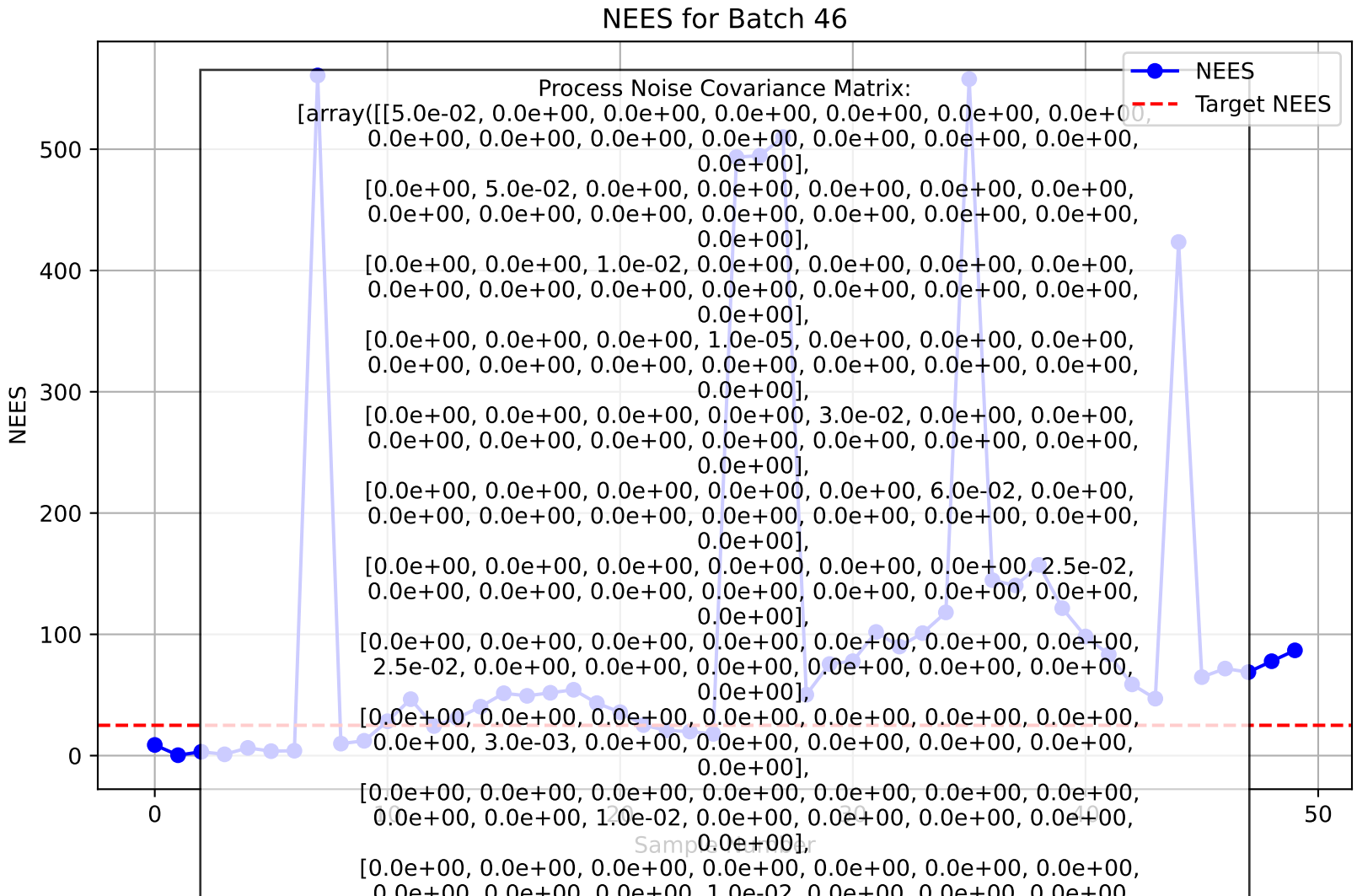

NEES for Batch 41
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.015, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
0
100
200
300
400
500
0
10
20
30
40
50

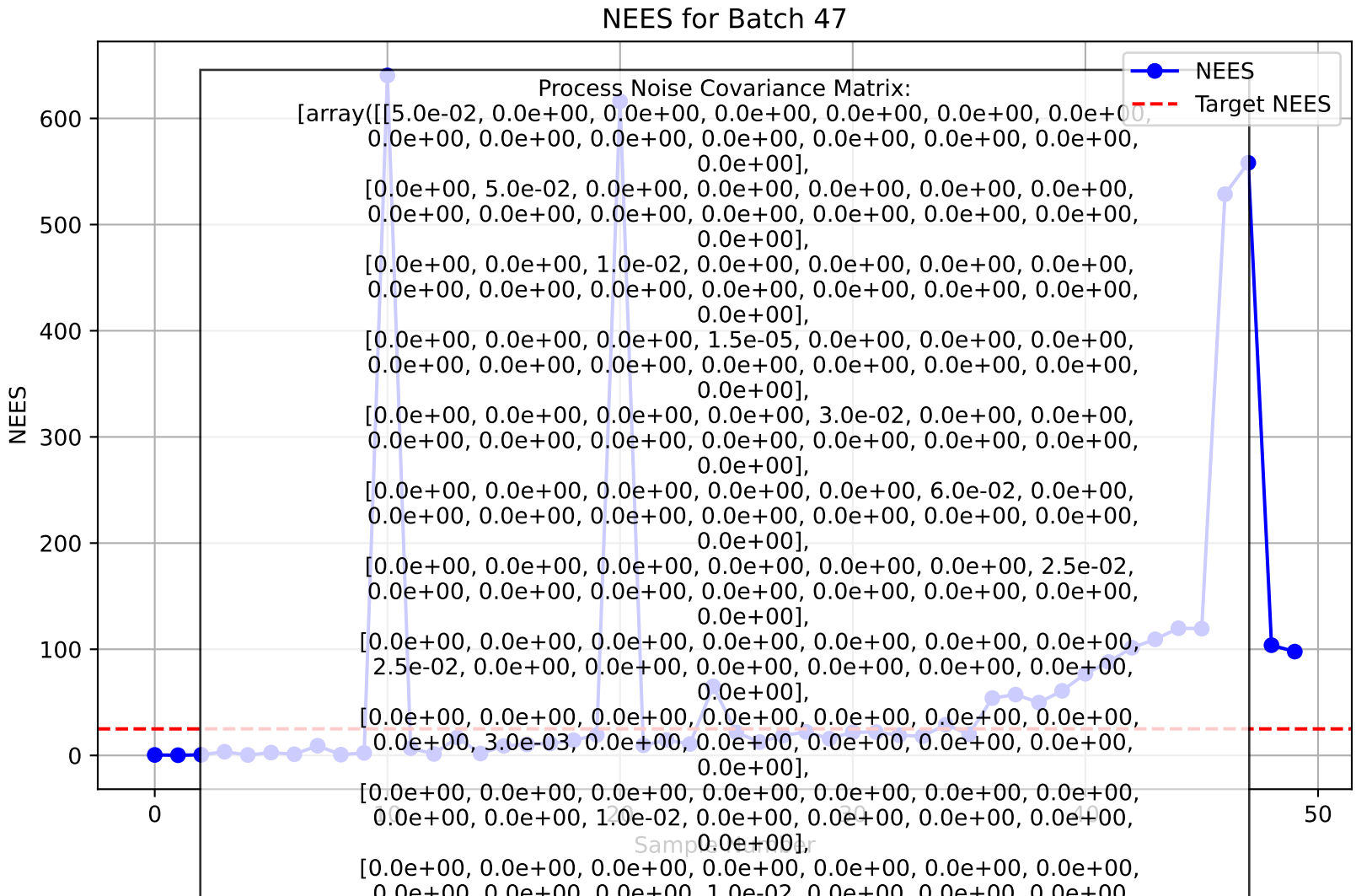

NEES for Batch 42
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.001, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. ,
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50

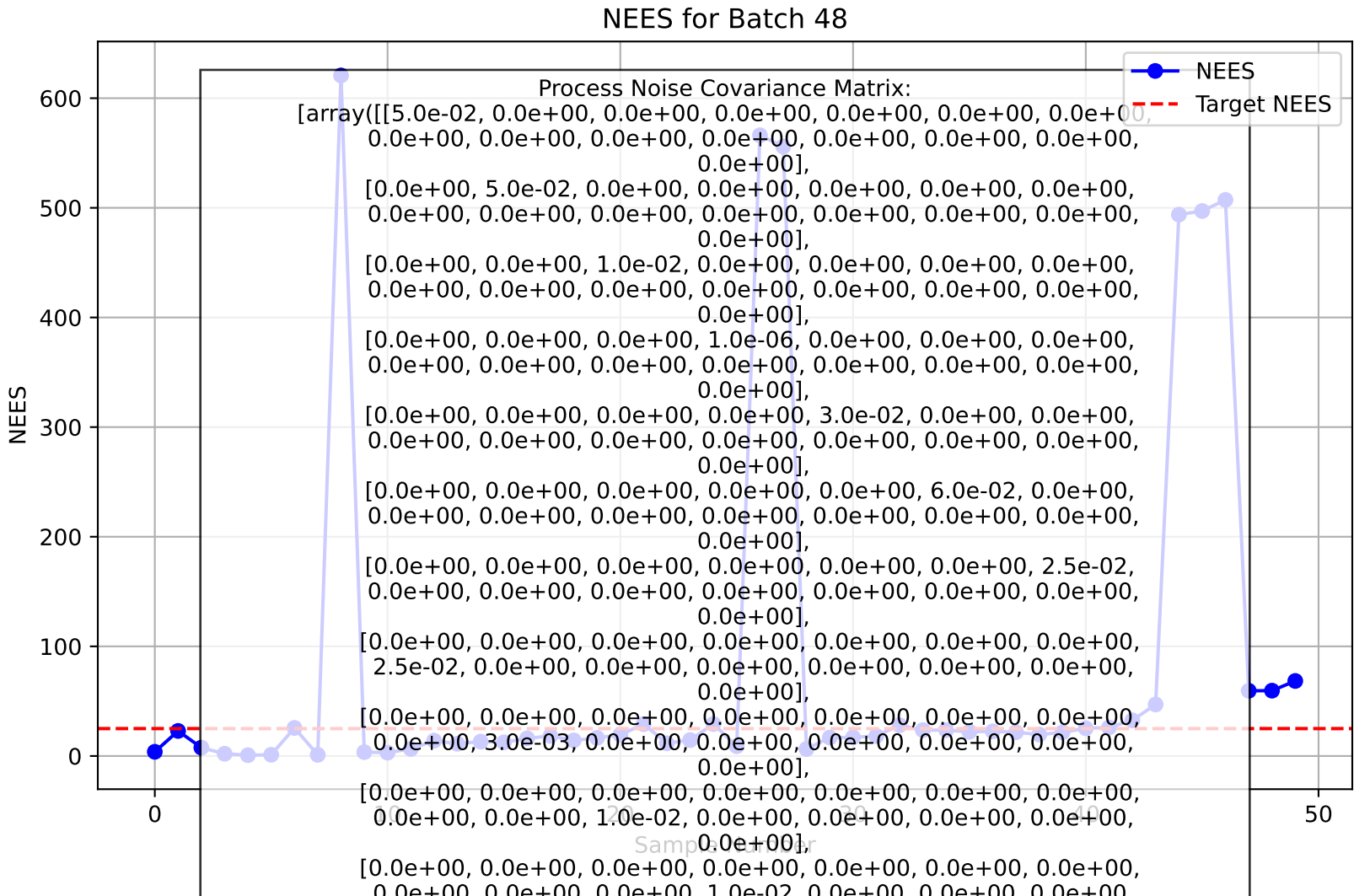

NEES for Batch 43
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.0015, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
20
40
60
80
0
10
20
30
40
50
Sample Index


NEES for Batch 44
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.0001, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Index
0
10
20
30
40
50
0
100
200
300
400
500
600


NEES for Batch 45
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.00015, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.003 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
0
10
20
30
40
50


NEES for Batch 46
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-05, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50


NEES for Batch 47
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.5e-05, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50


NEES for Batch 48
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-06, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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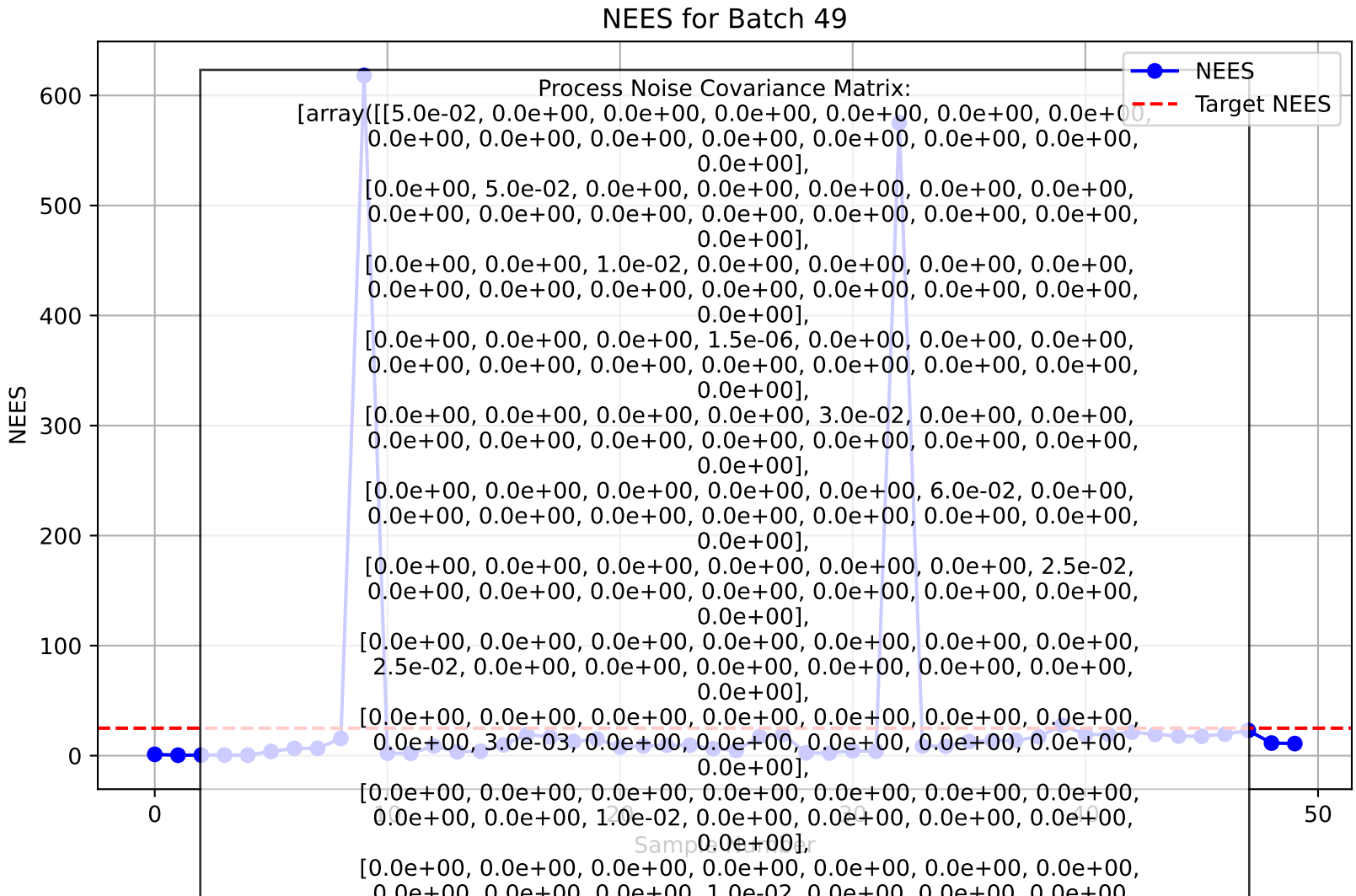
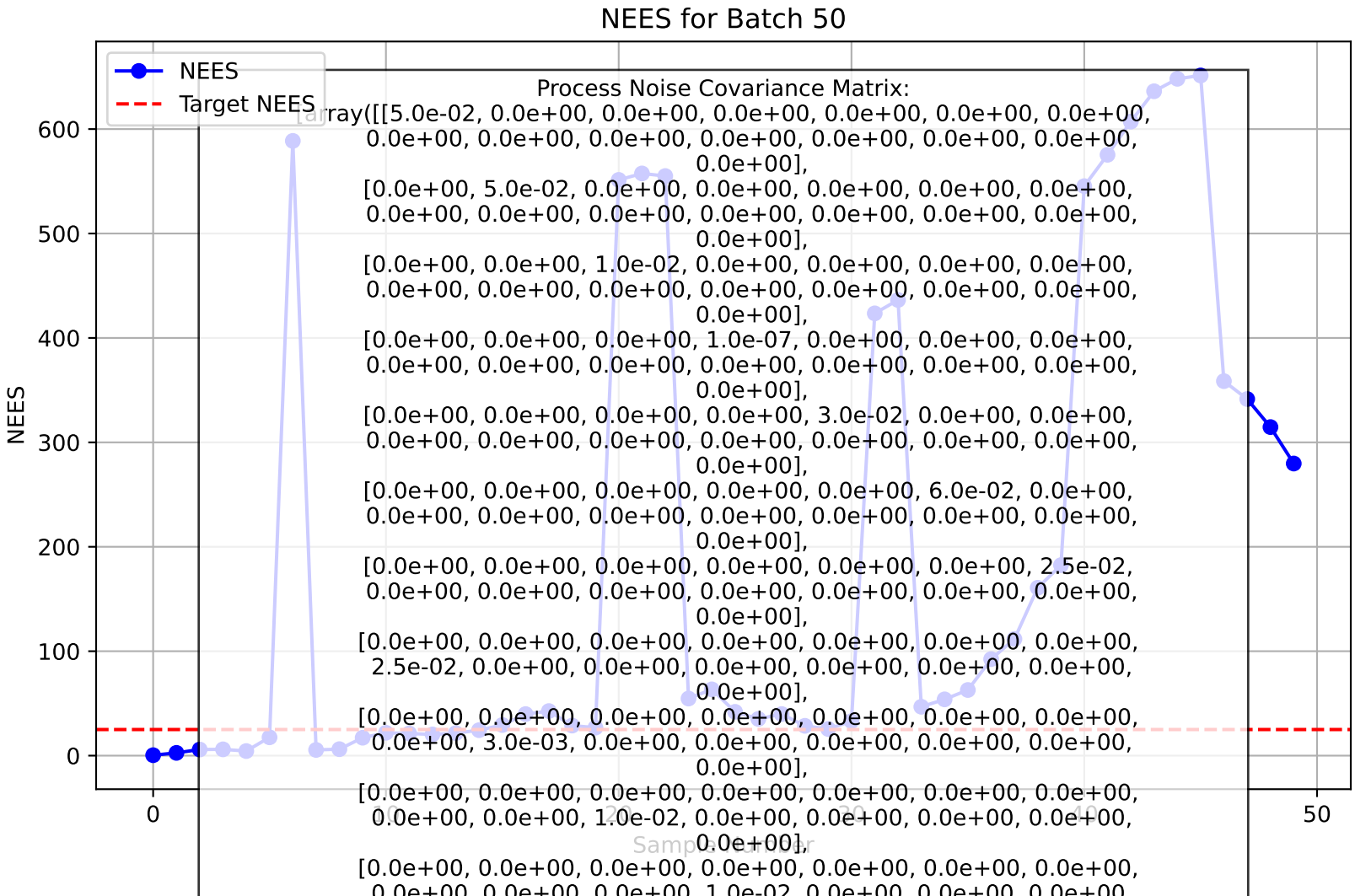
100
200
300
400
500
600
0
50


NEES for Batch 49
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.5e-06, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50


NEES for Batch 50
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-07, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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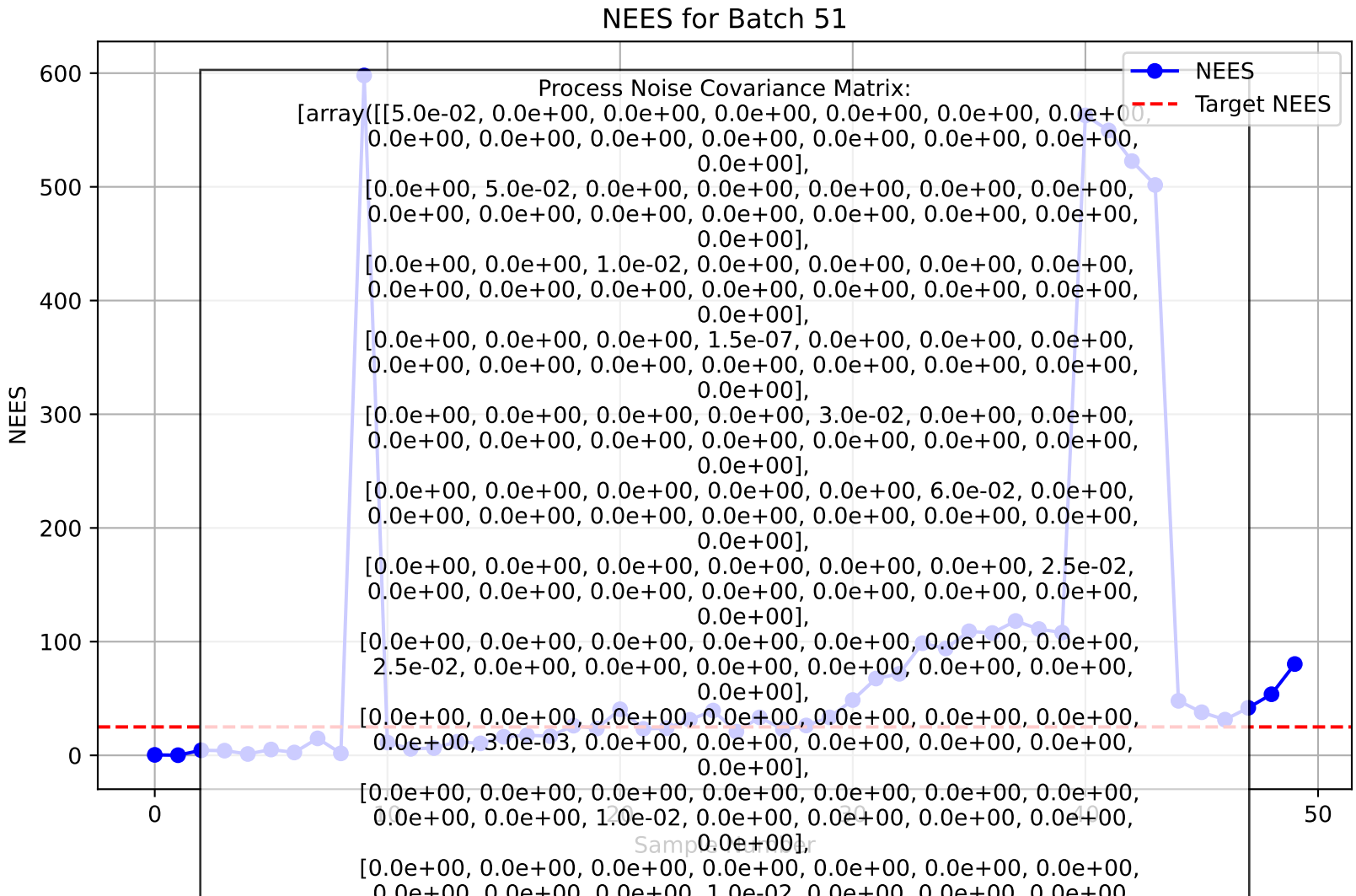
100
200
300
400
500
600
0
50


NEES for Batch 51
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.5e-07, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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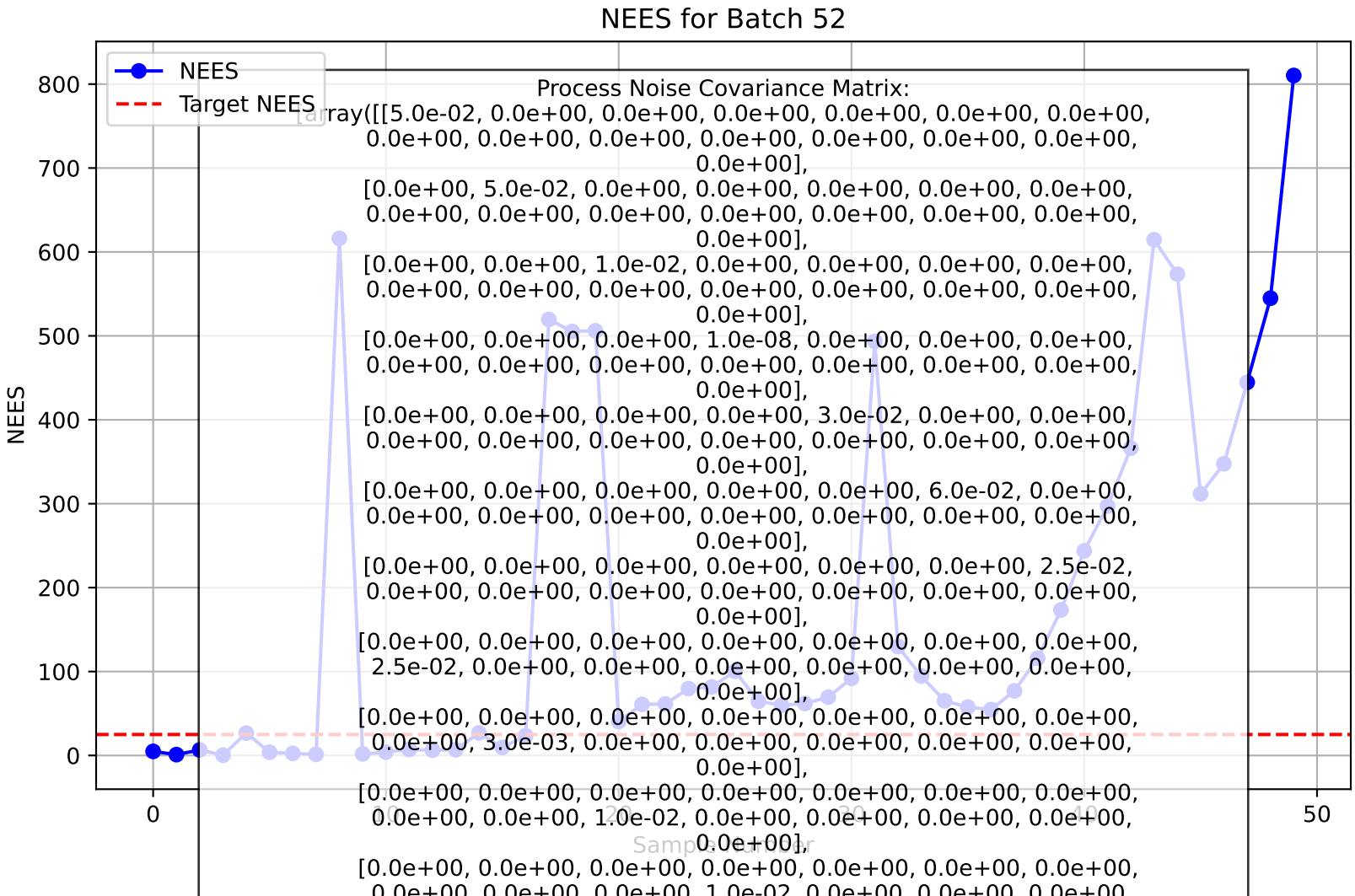
100
200
300
400
500
600
0
50


NEES for Batch 52
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-08, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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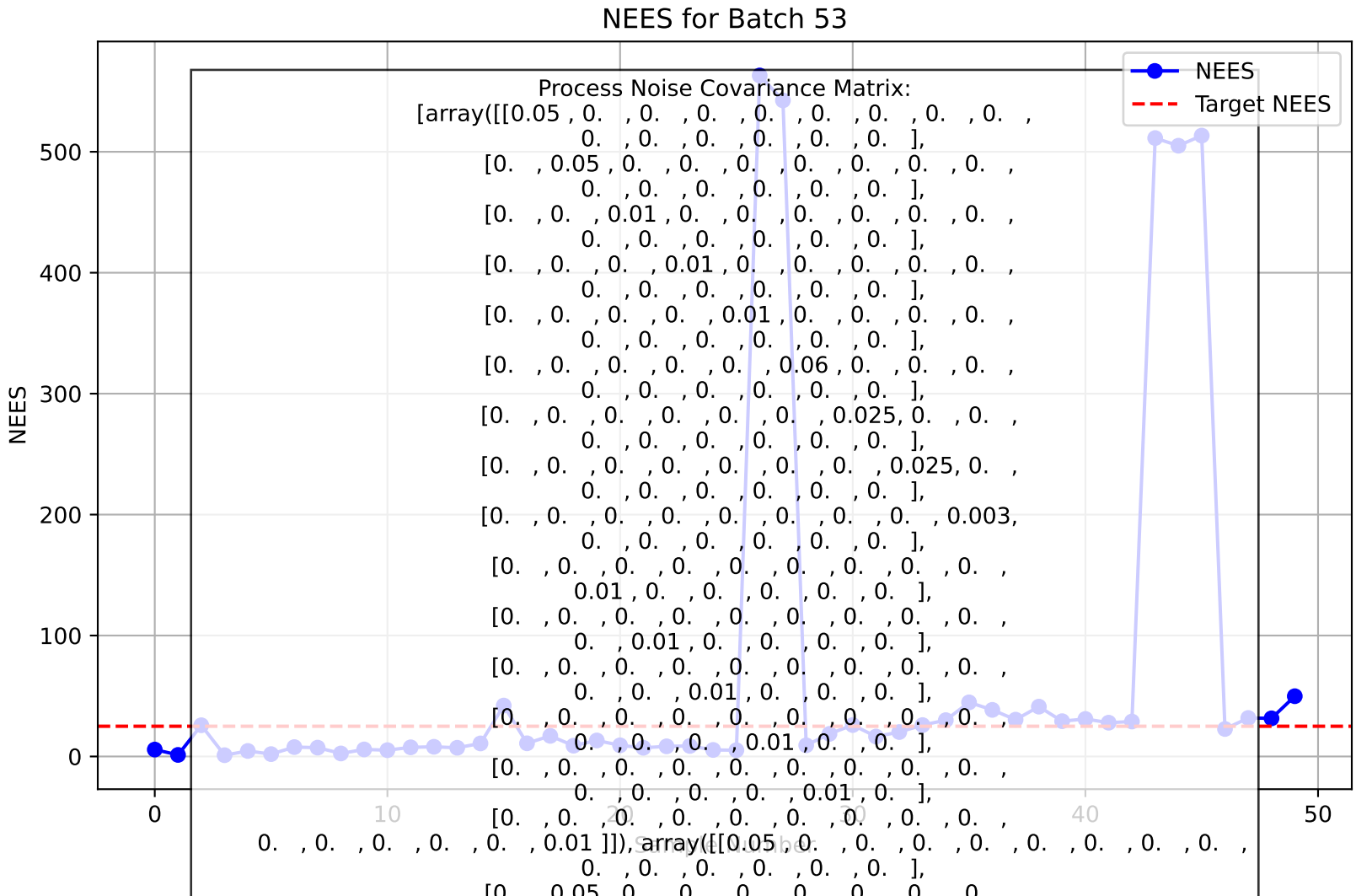
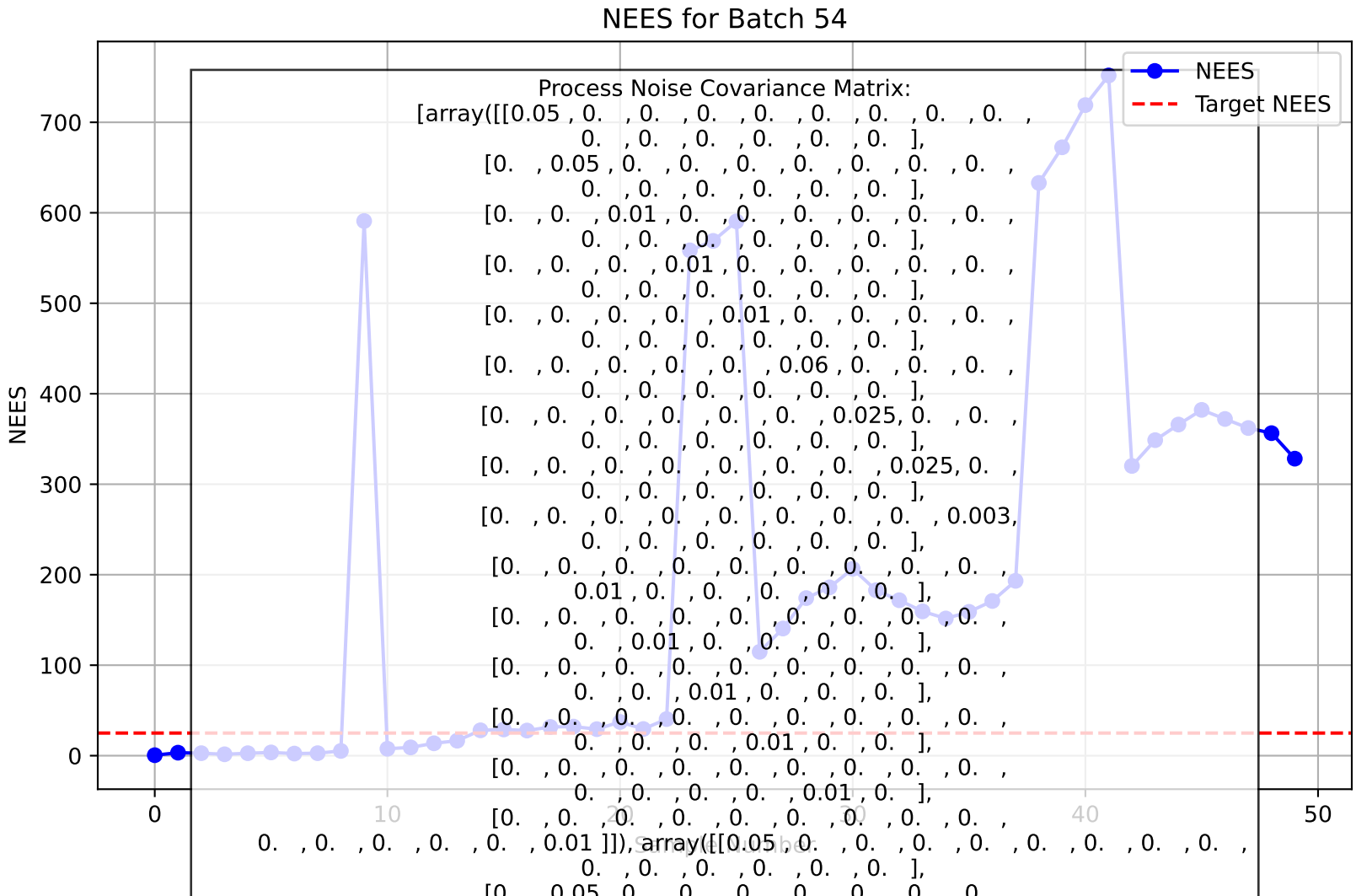
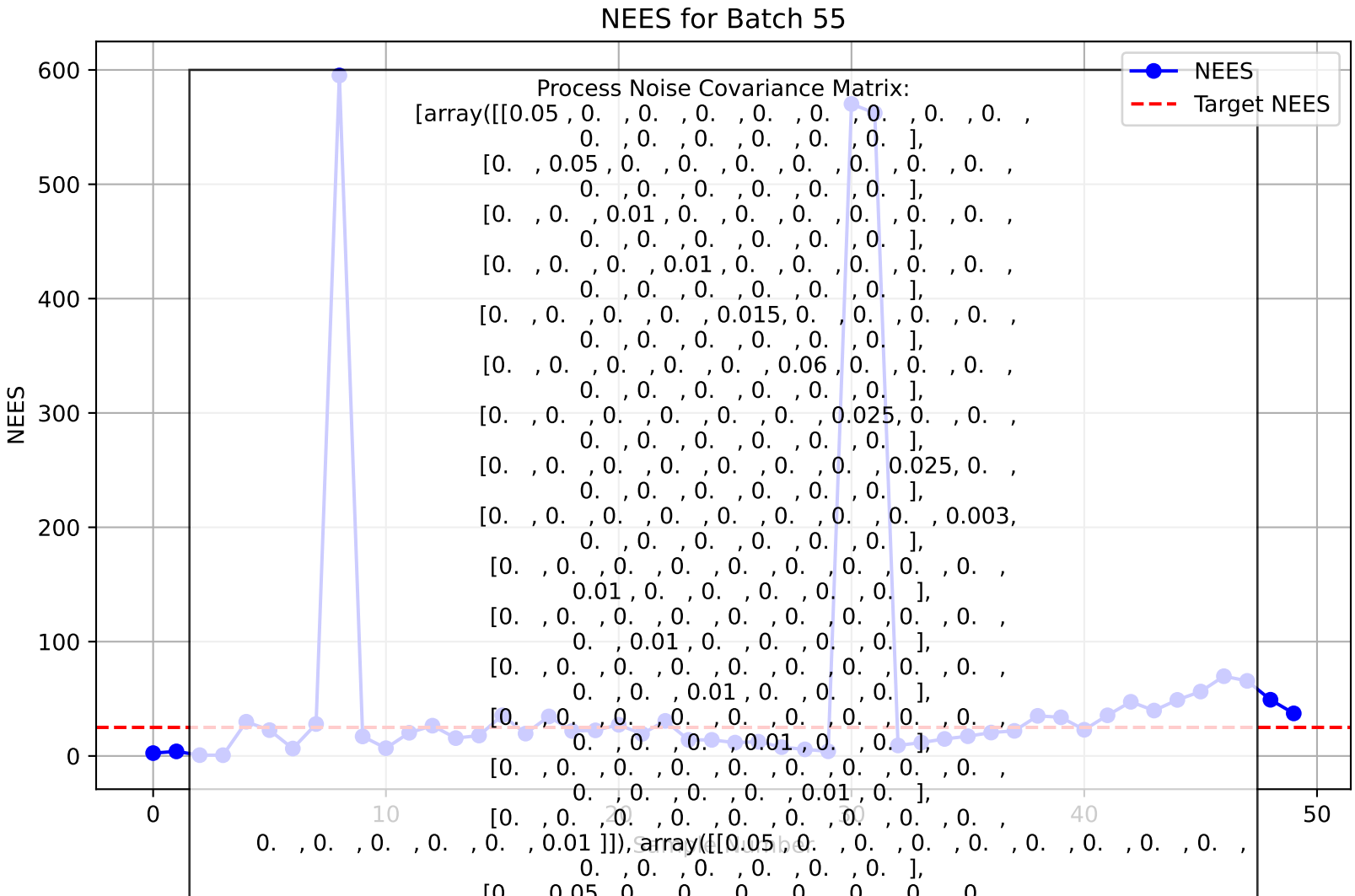
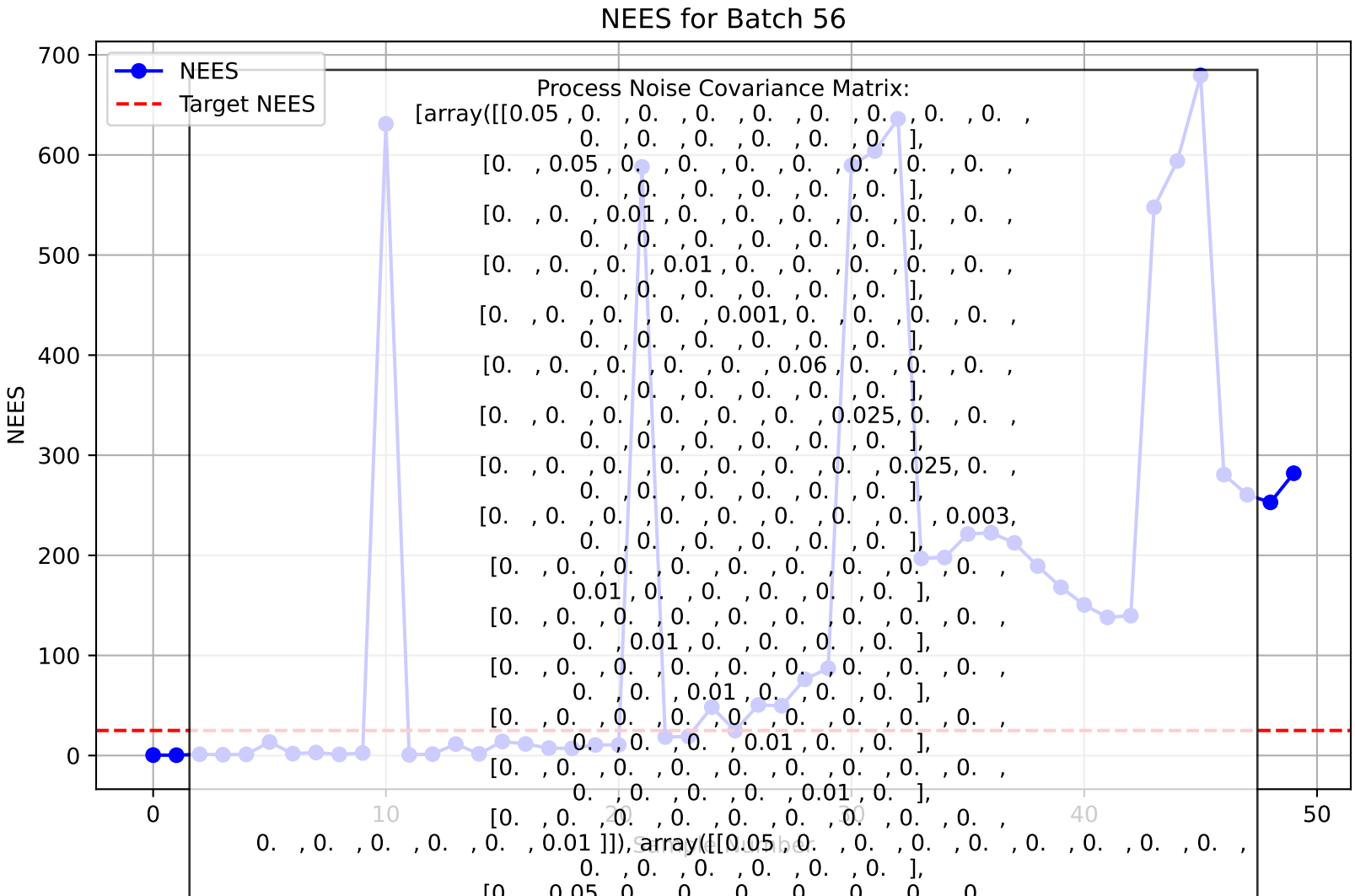
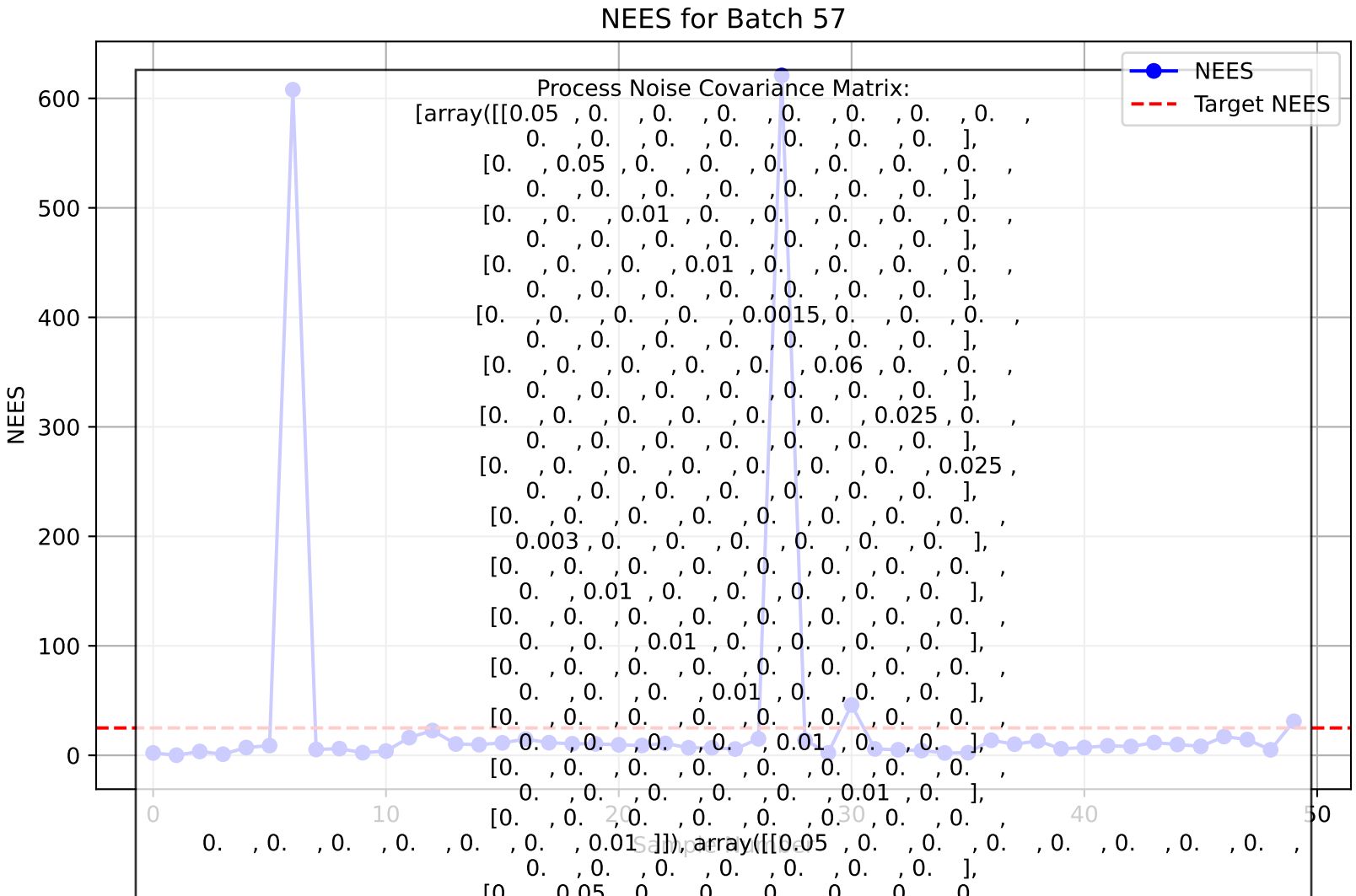
100
200
300
400
500
600
700
800
0
50

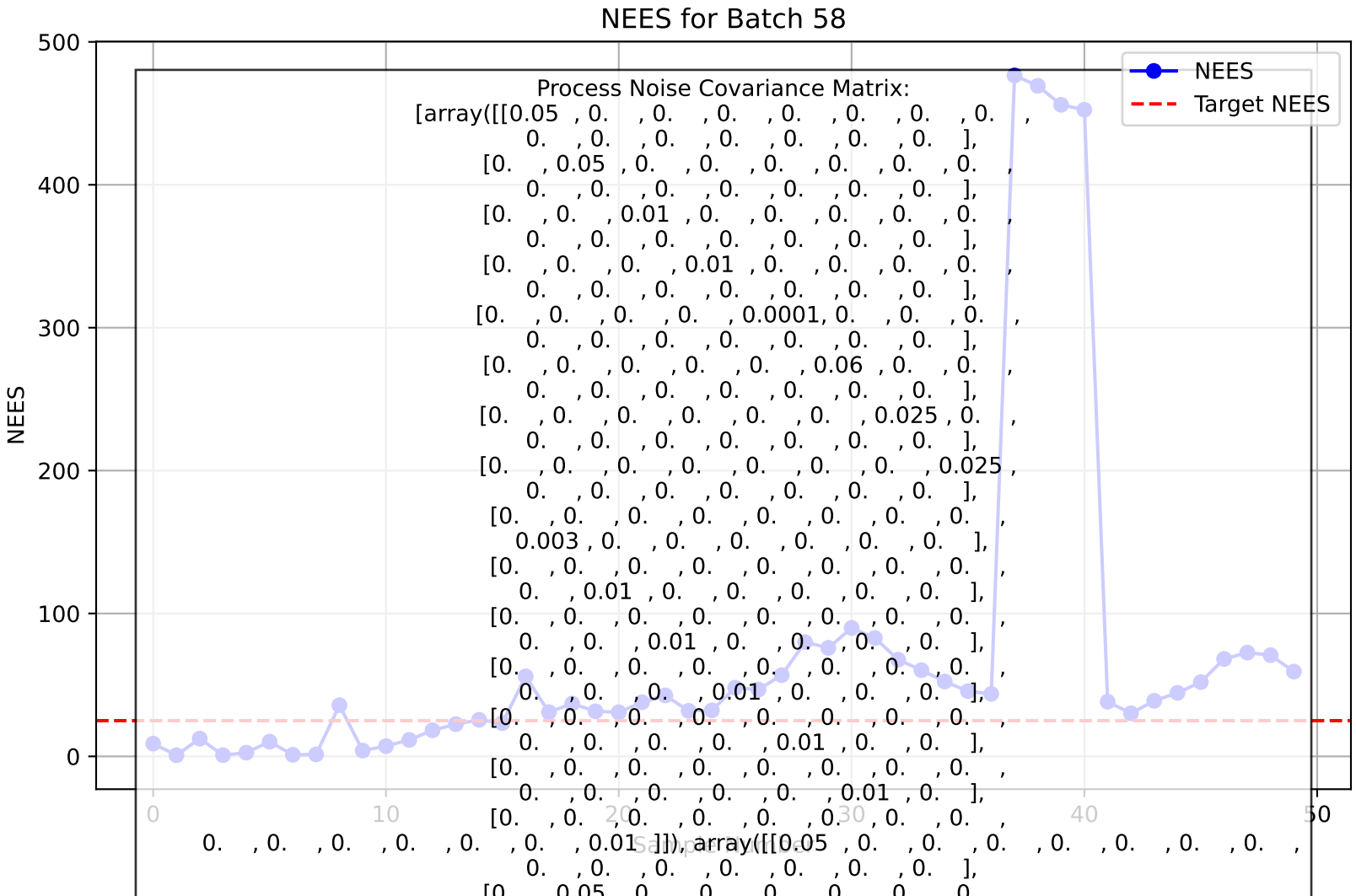

NEES for Batch 53
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
500
0
10
20
30
40
50

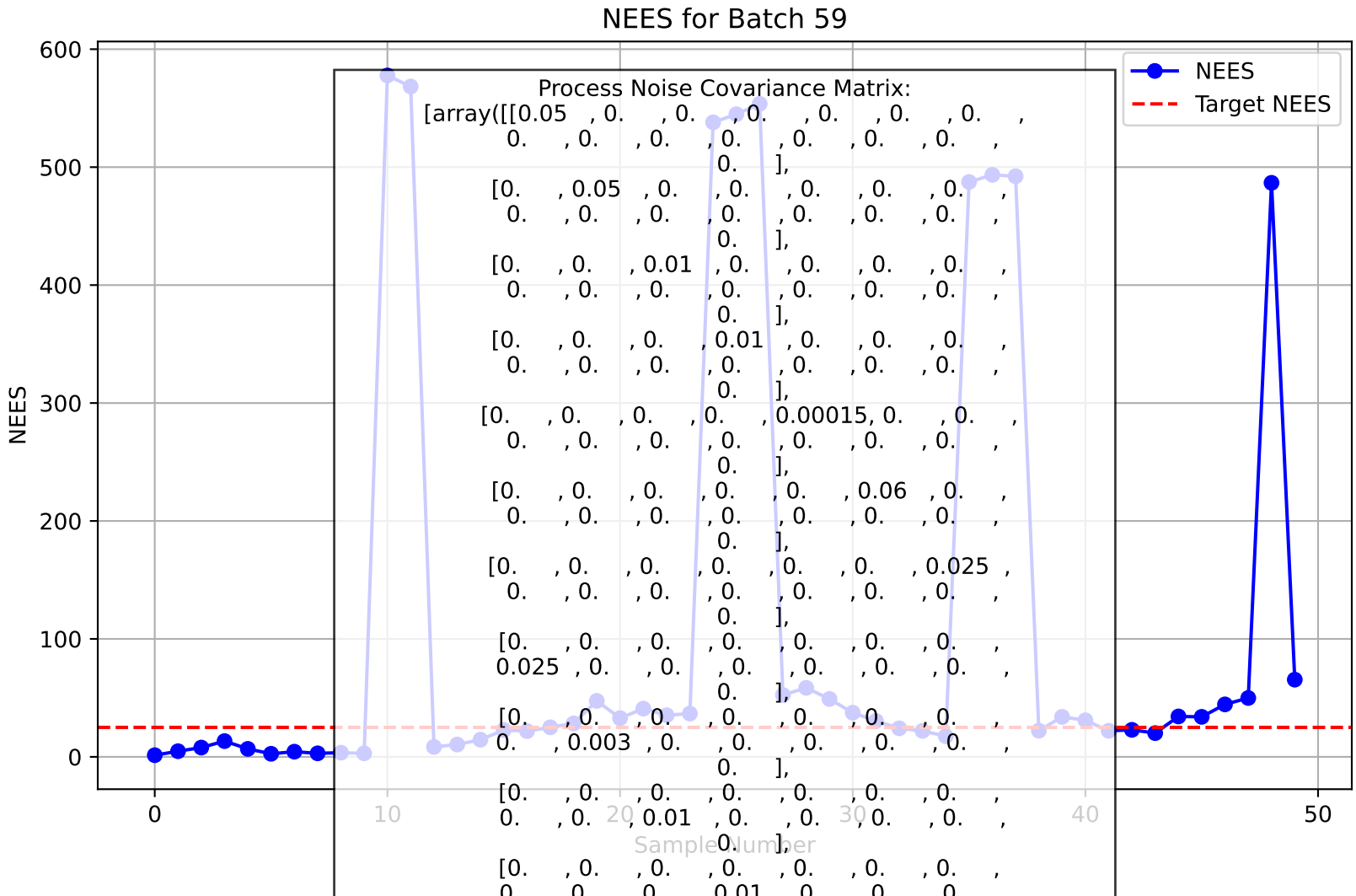

NEES for Batch 54
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
0
10
20
30
40
50
0
100
200
300
400
500
600
700

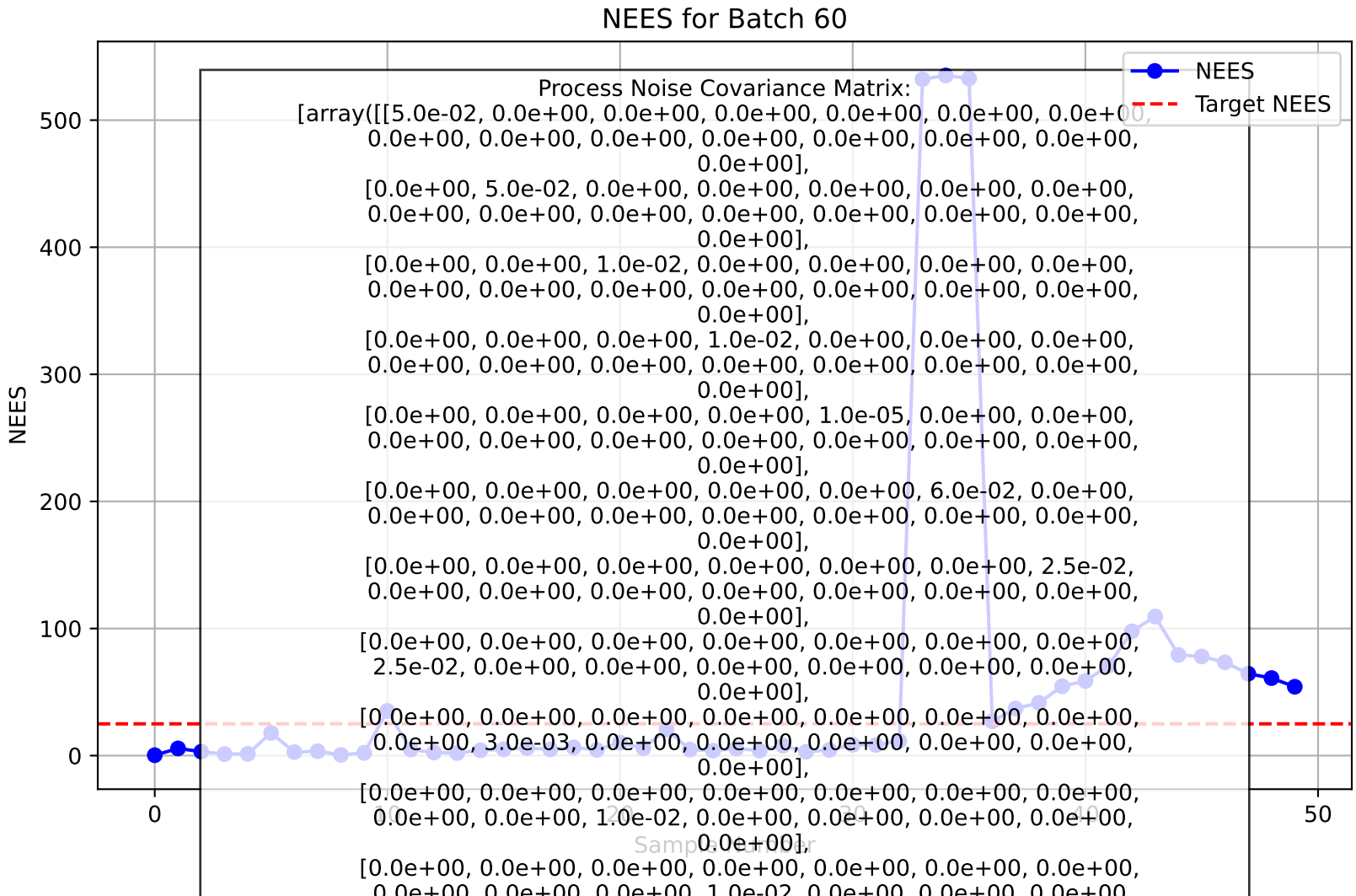

NEES for Batch 55
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.015, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
600
500
400
300
200
100
0
0
10
20
30
40
50

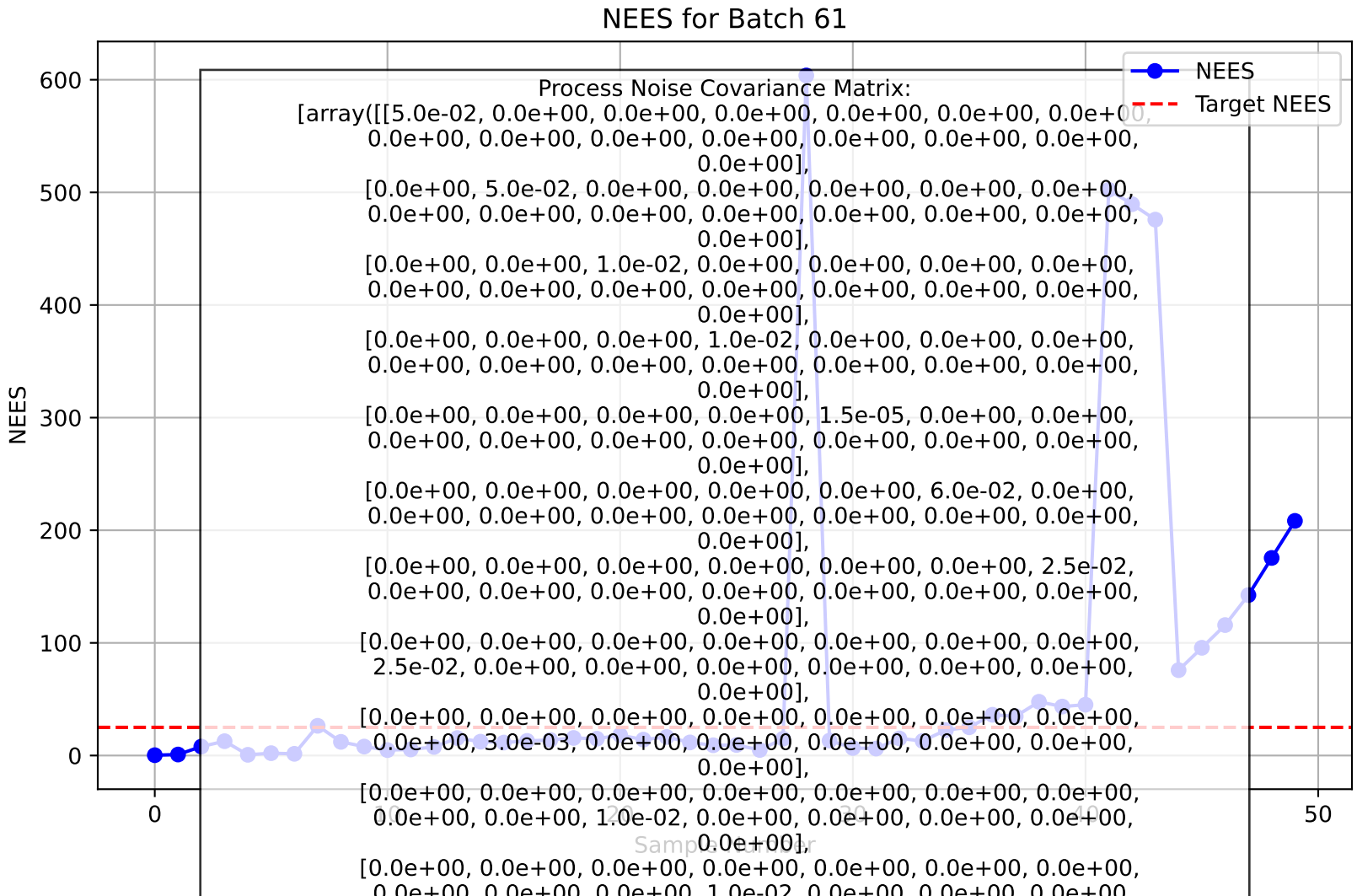

NEES for Batch 56
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.001, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600
700


NEES for Batch 57
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.0015, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
0
100
200
300
400
500
600
0
10
20
30
40
50
Sample Index


NEES for Batch 58
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.0001, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Index
0
10
20
30
40
50
0
100
200
300
400
500


NEES for Batch 59
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.00015, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.003 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,


NEES for Batch 60
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-05, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50


NEES for Batch 61
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-05, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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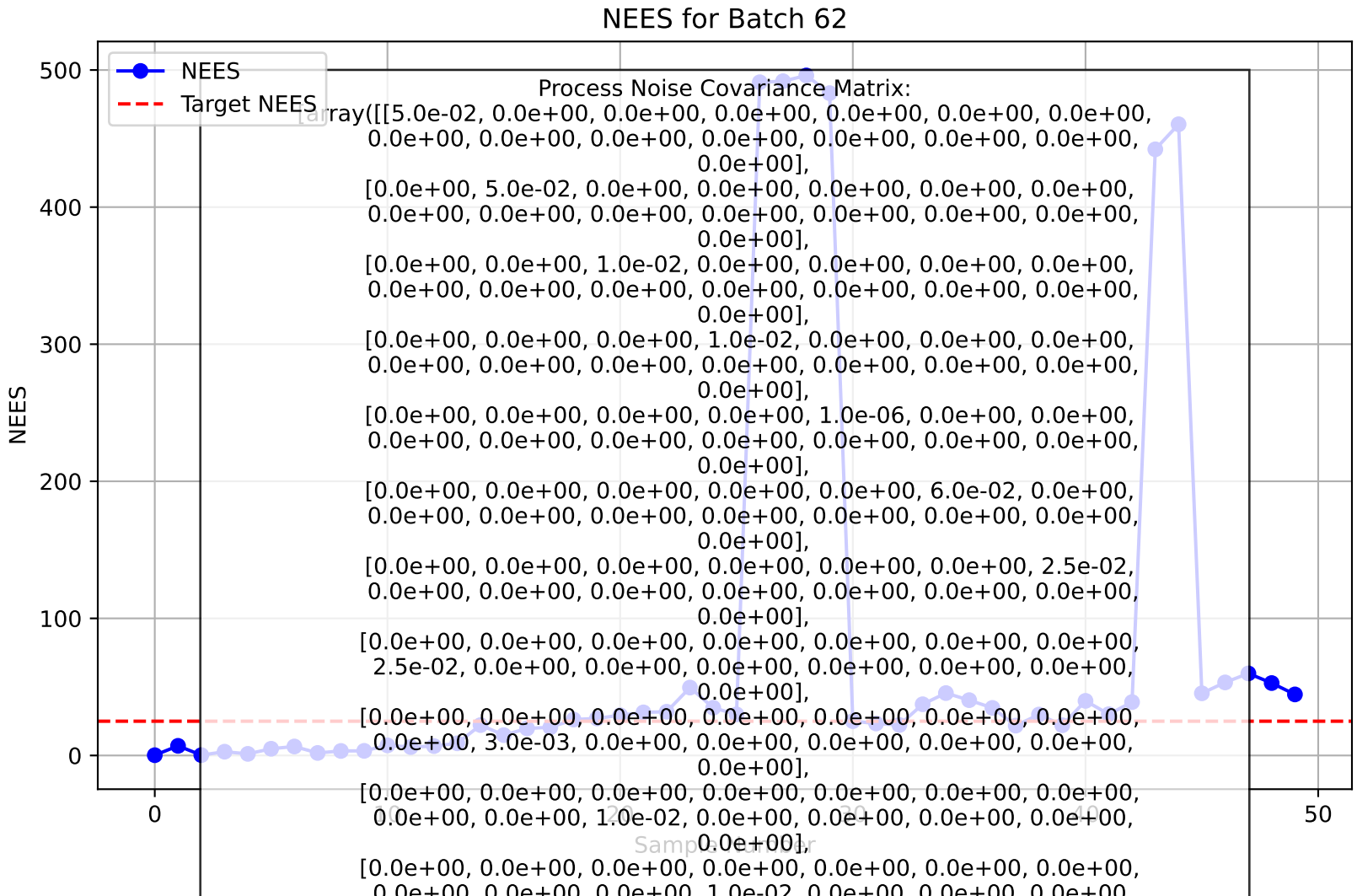
100
200
300
400
500
600
0
50


NEES for Batch 62
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-06, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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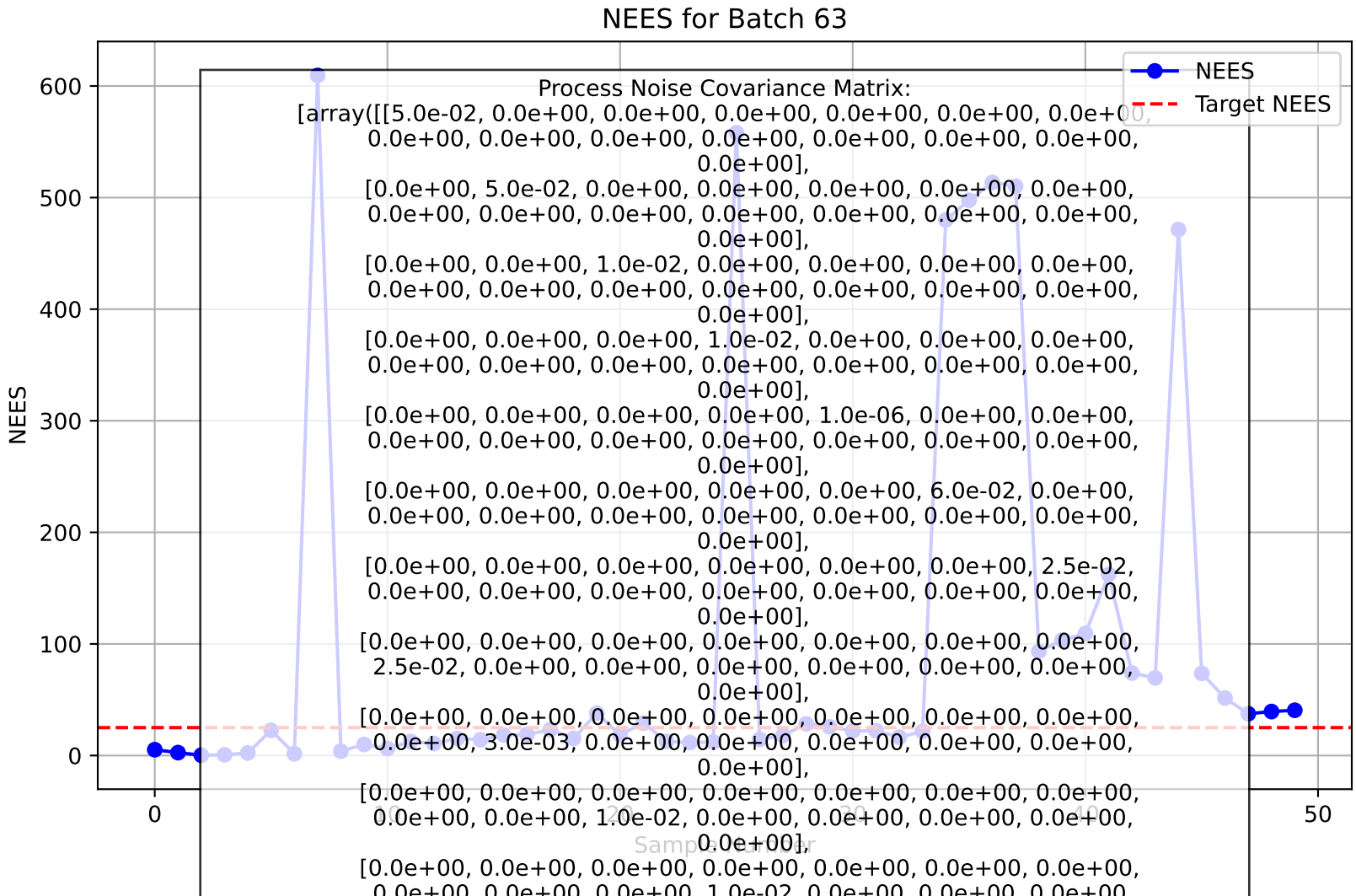
300
400
500
0
50


NEES for Batch 63
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-06, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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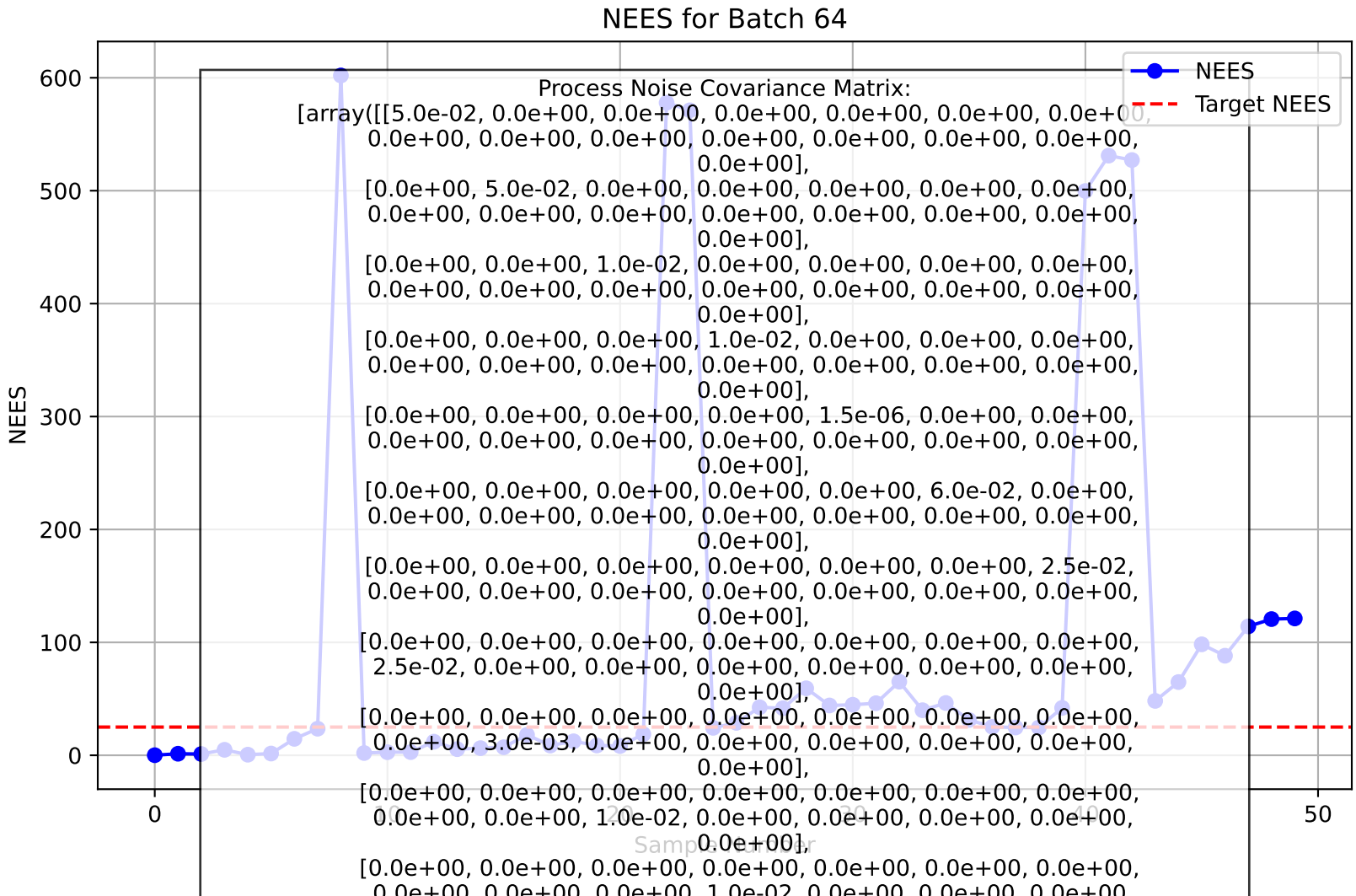
100
200
300
400
500
600
0
50


NEES for Batch 64
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-06, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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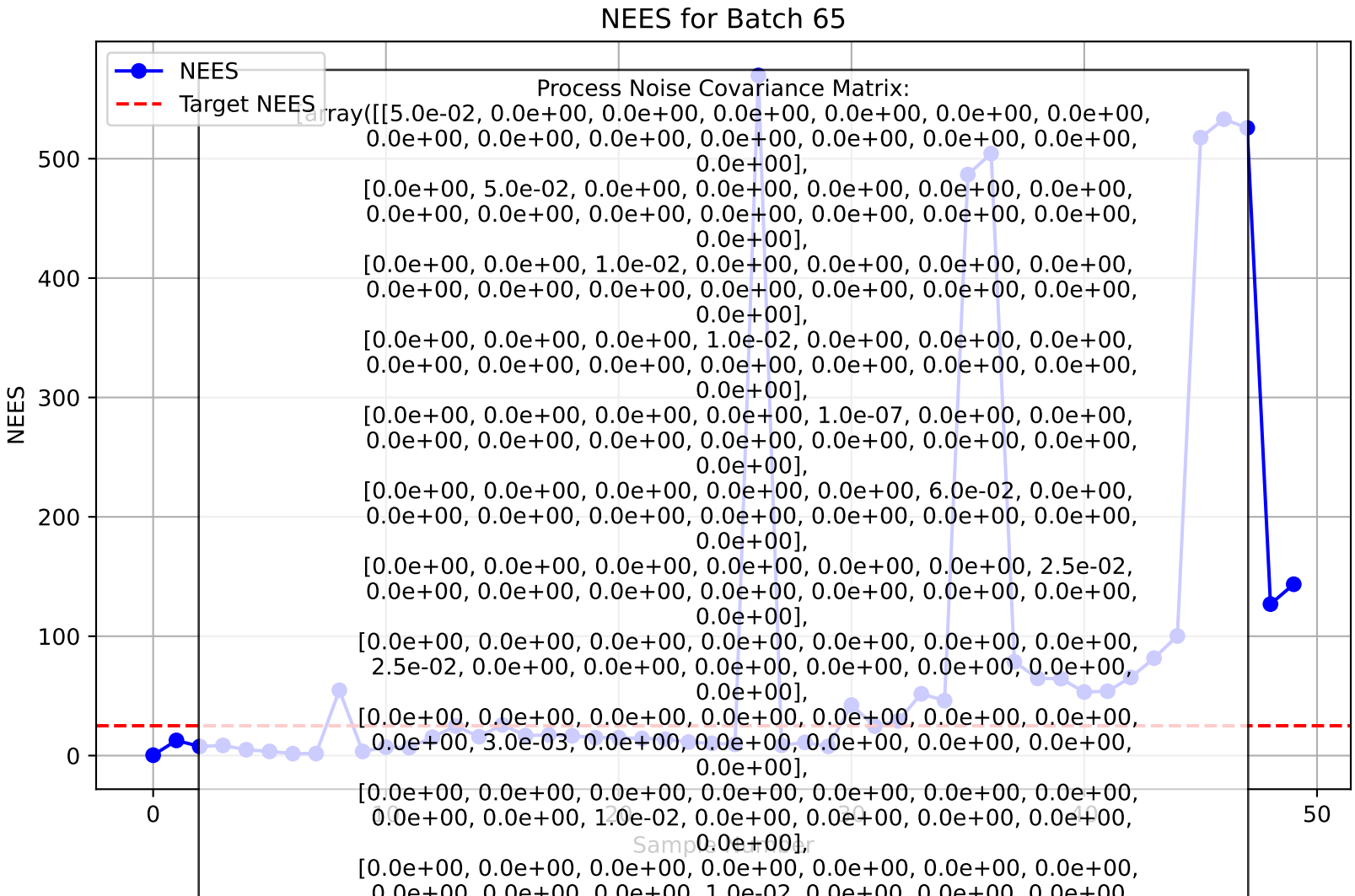
100
200
300
400
500
600
0
50


NEES for Batch 65
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-07, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
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0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
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0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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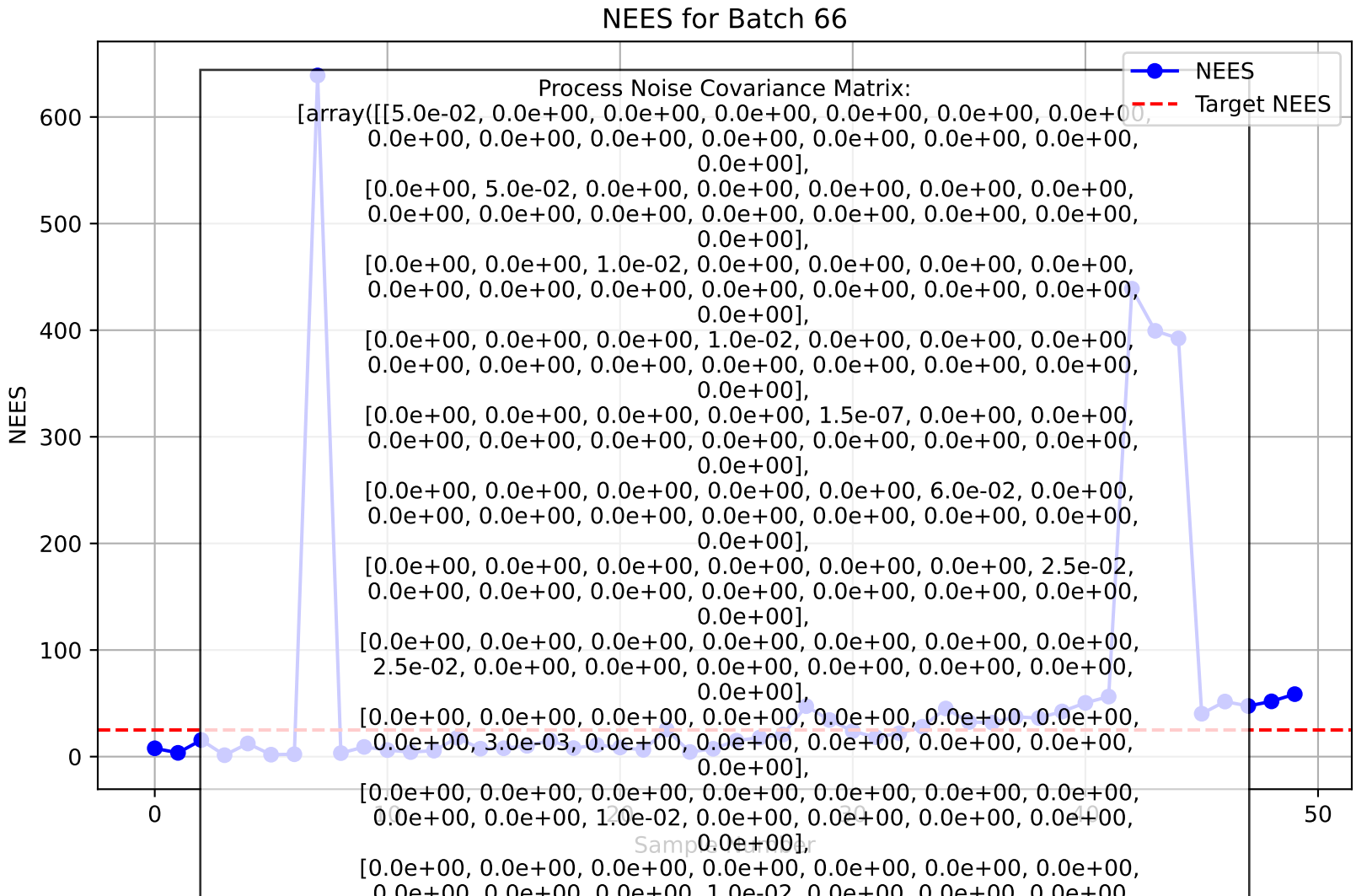
100
200
300
400
500
0
50


NEES for Batch 66
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-07, 0.0e+00, 0.0e+00,
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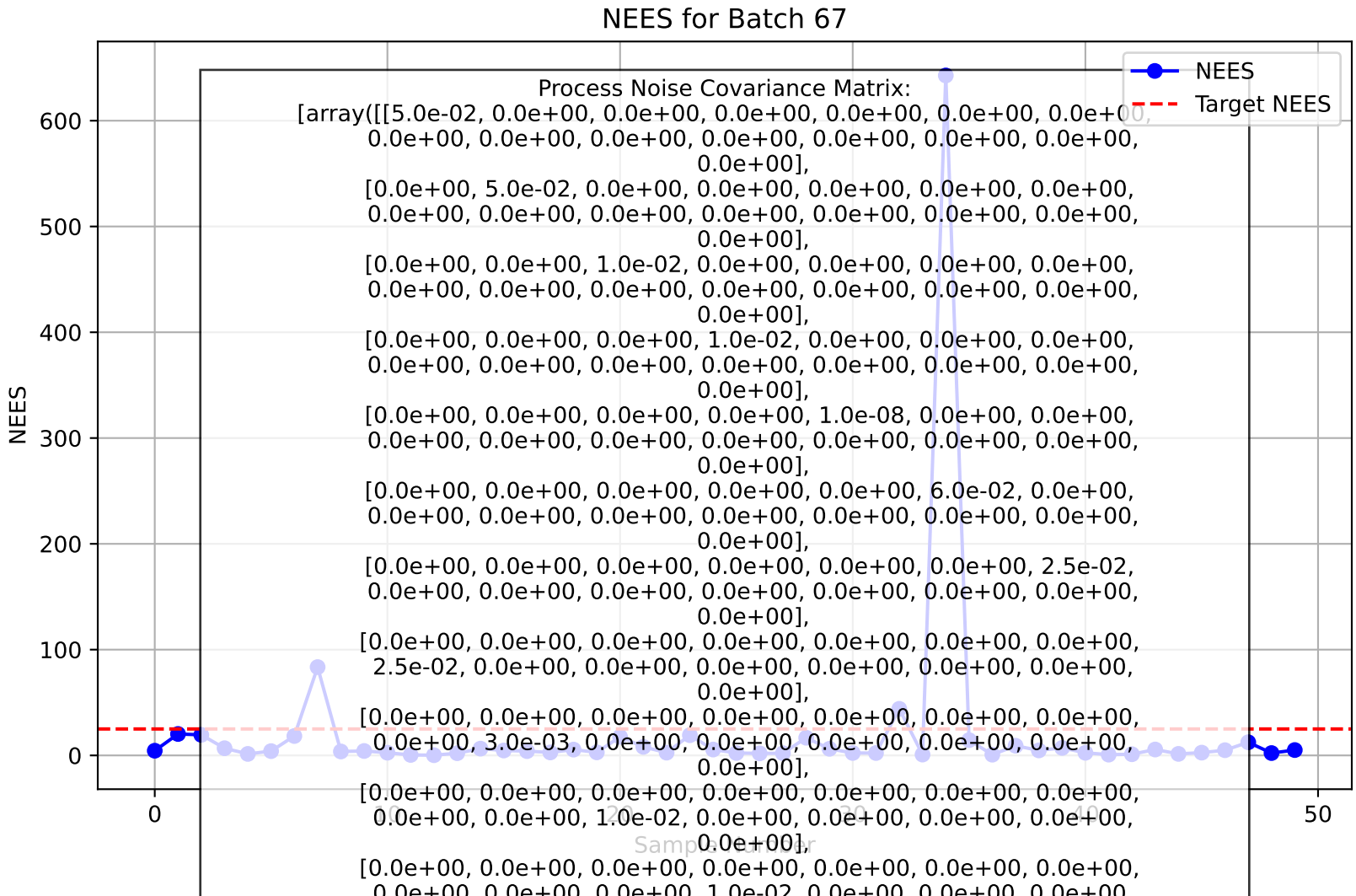
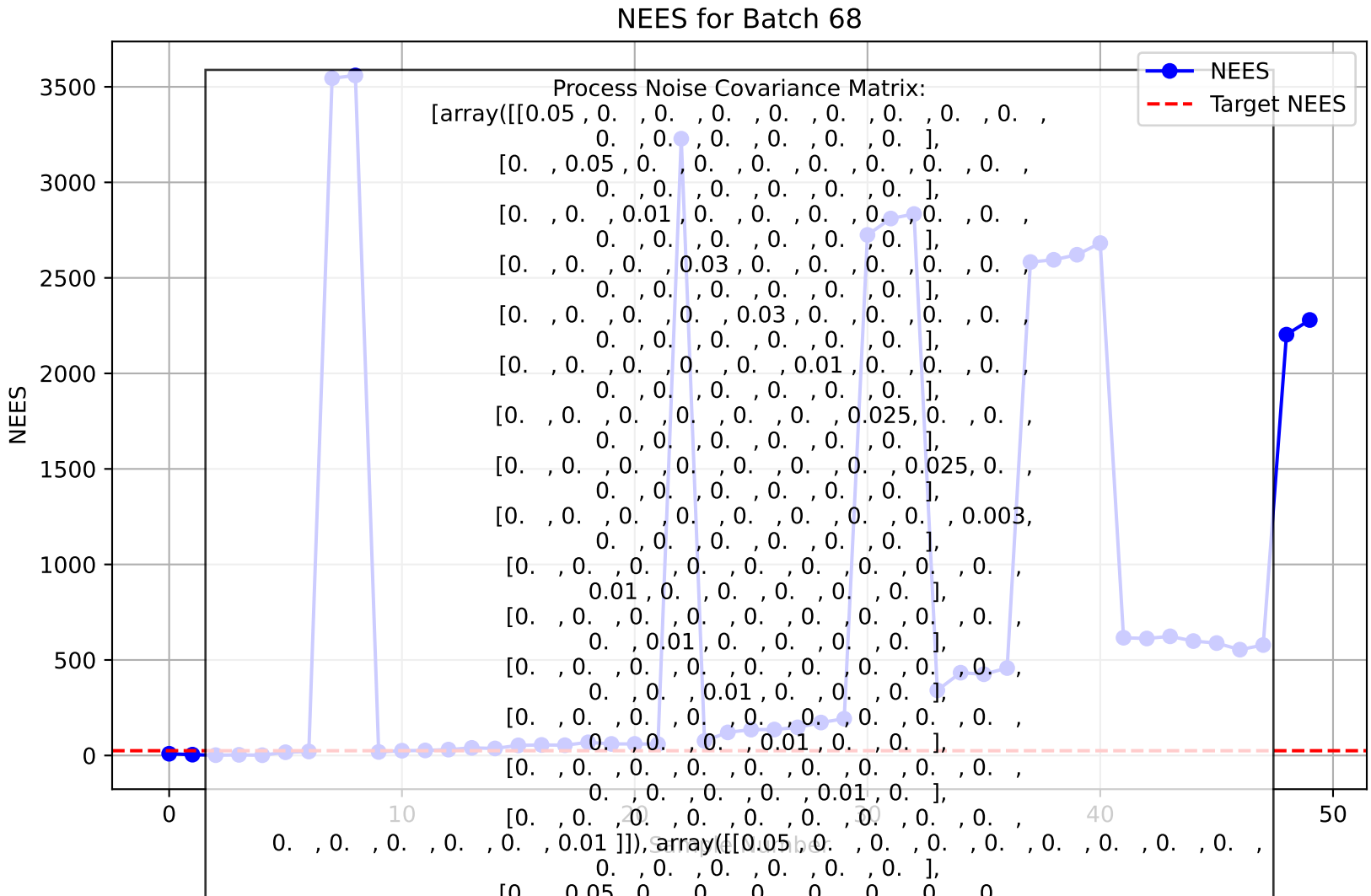
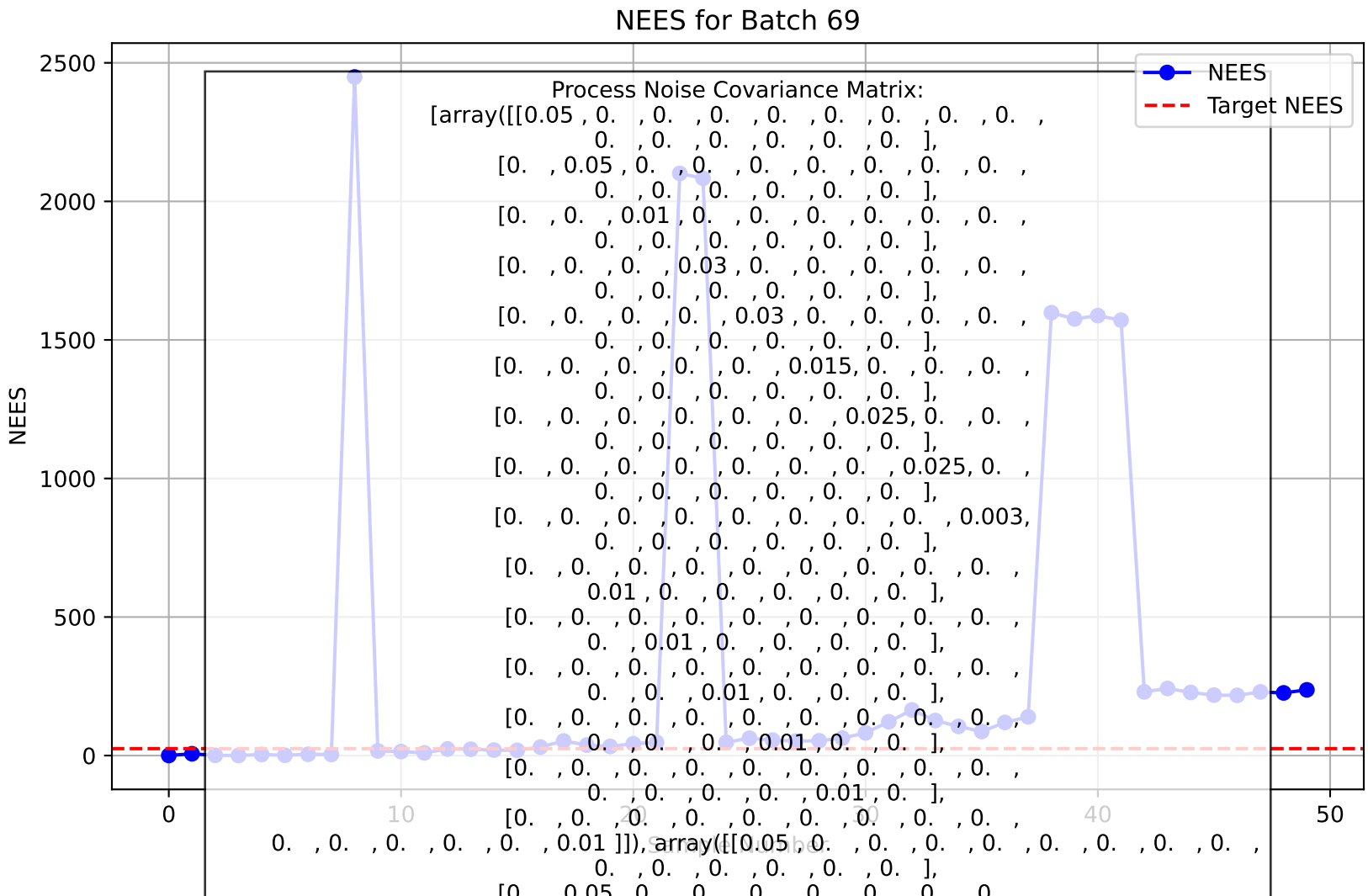
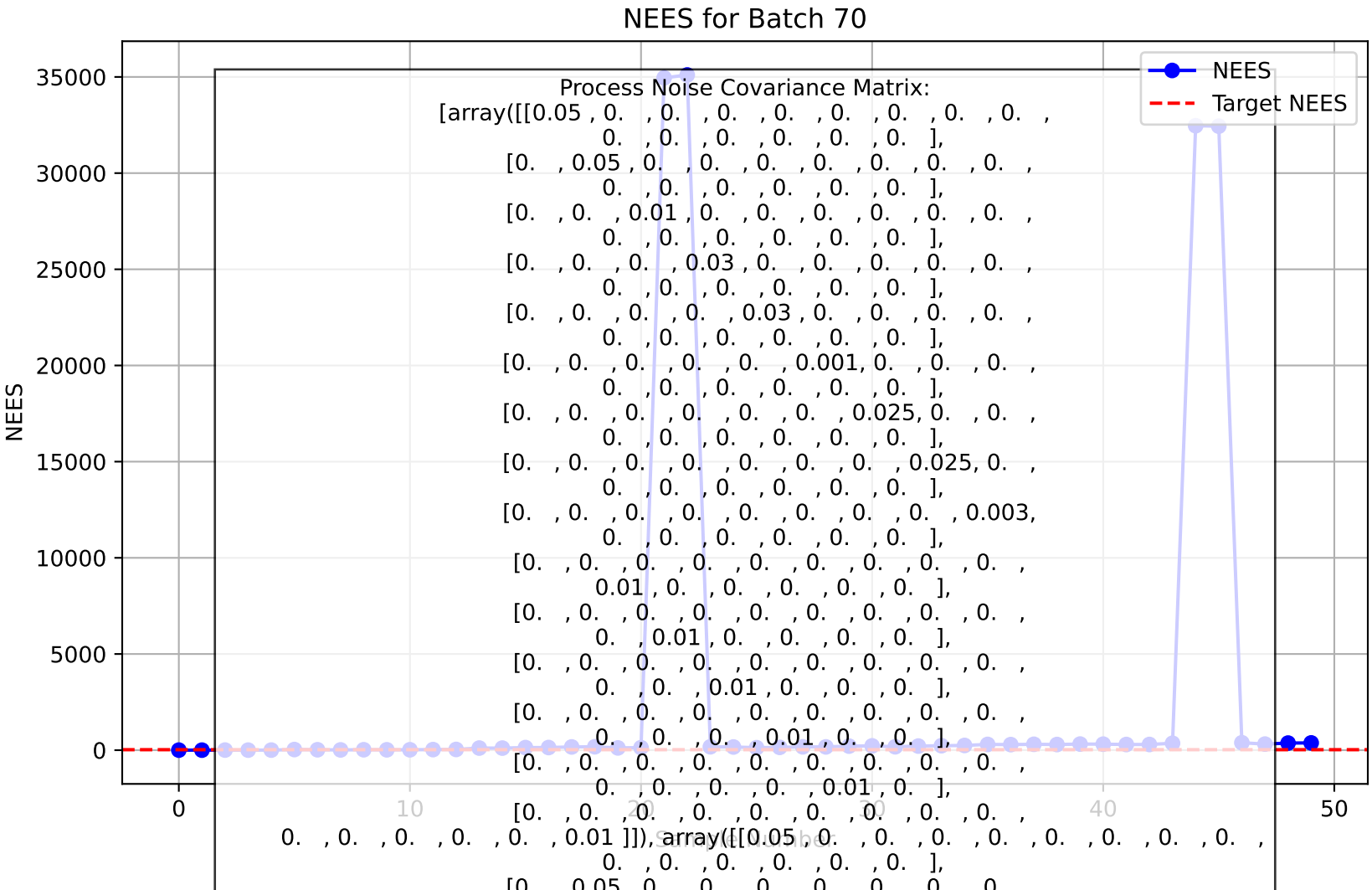
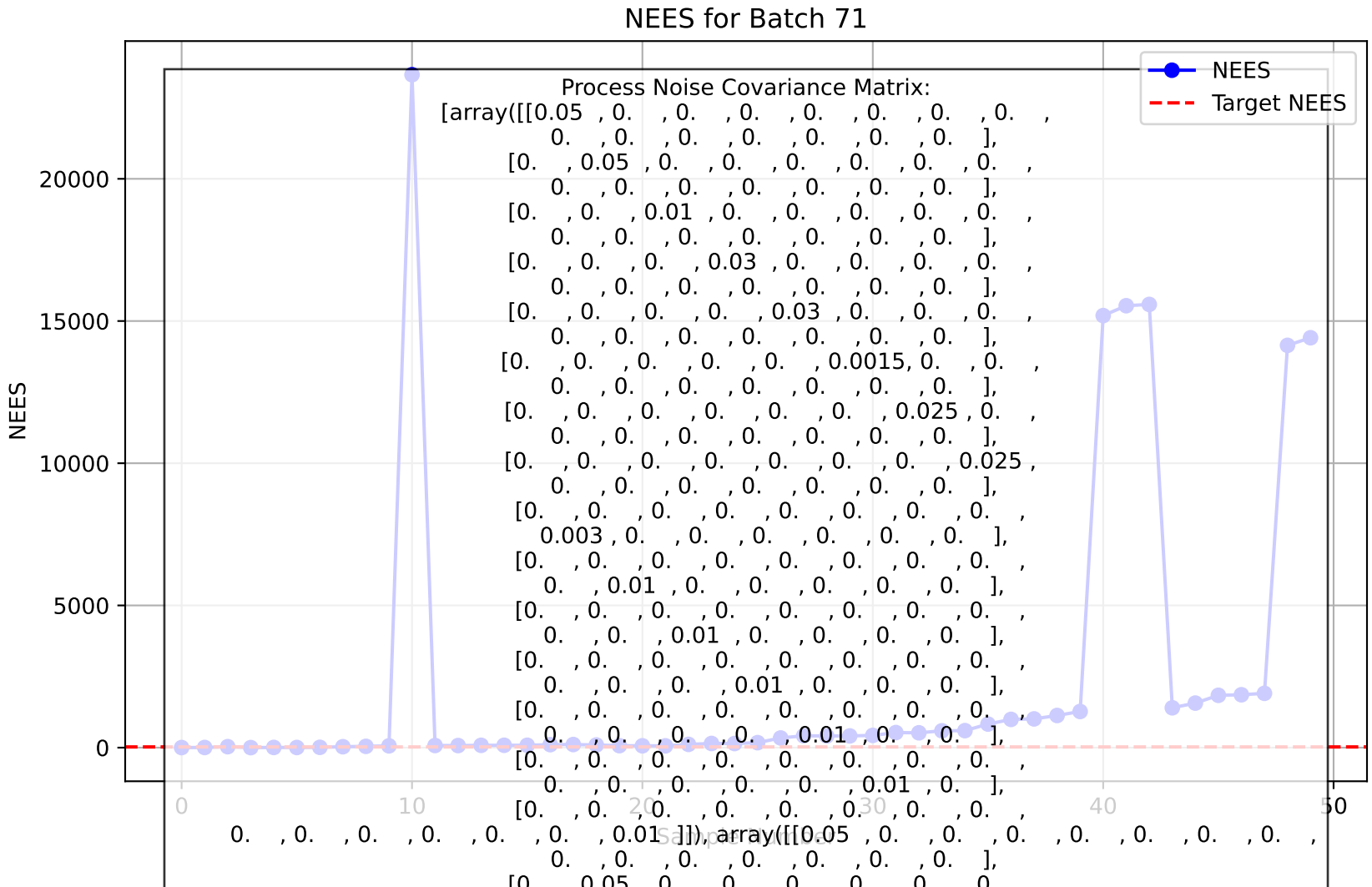
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

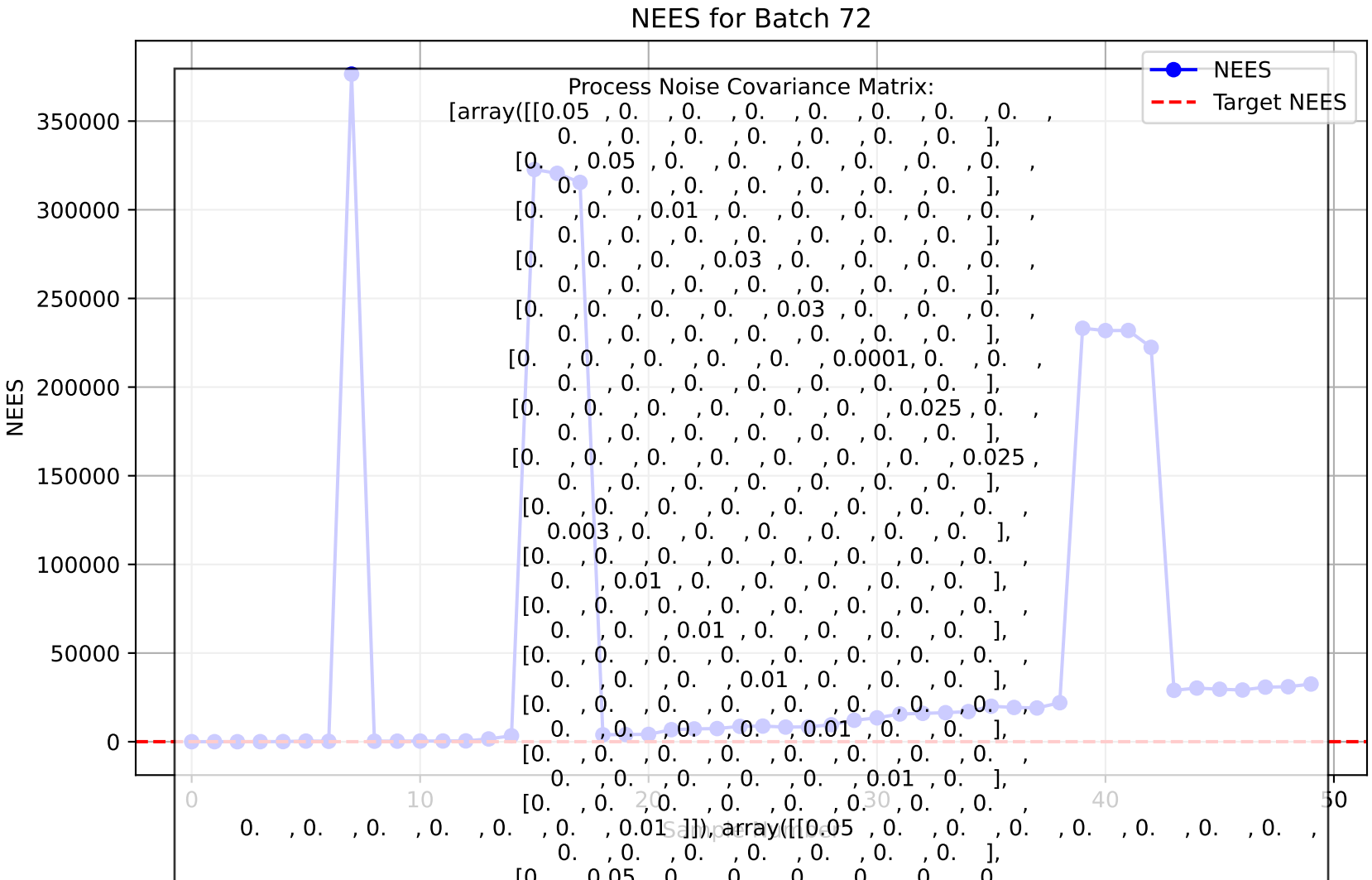

NEES for Batch 67
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-08, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

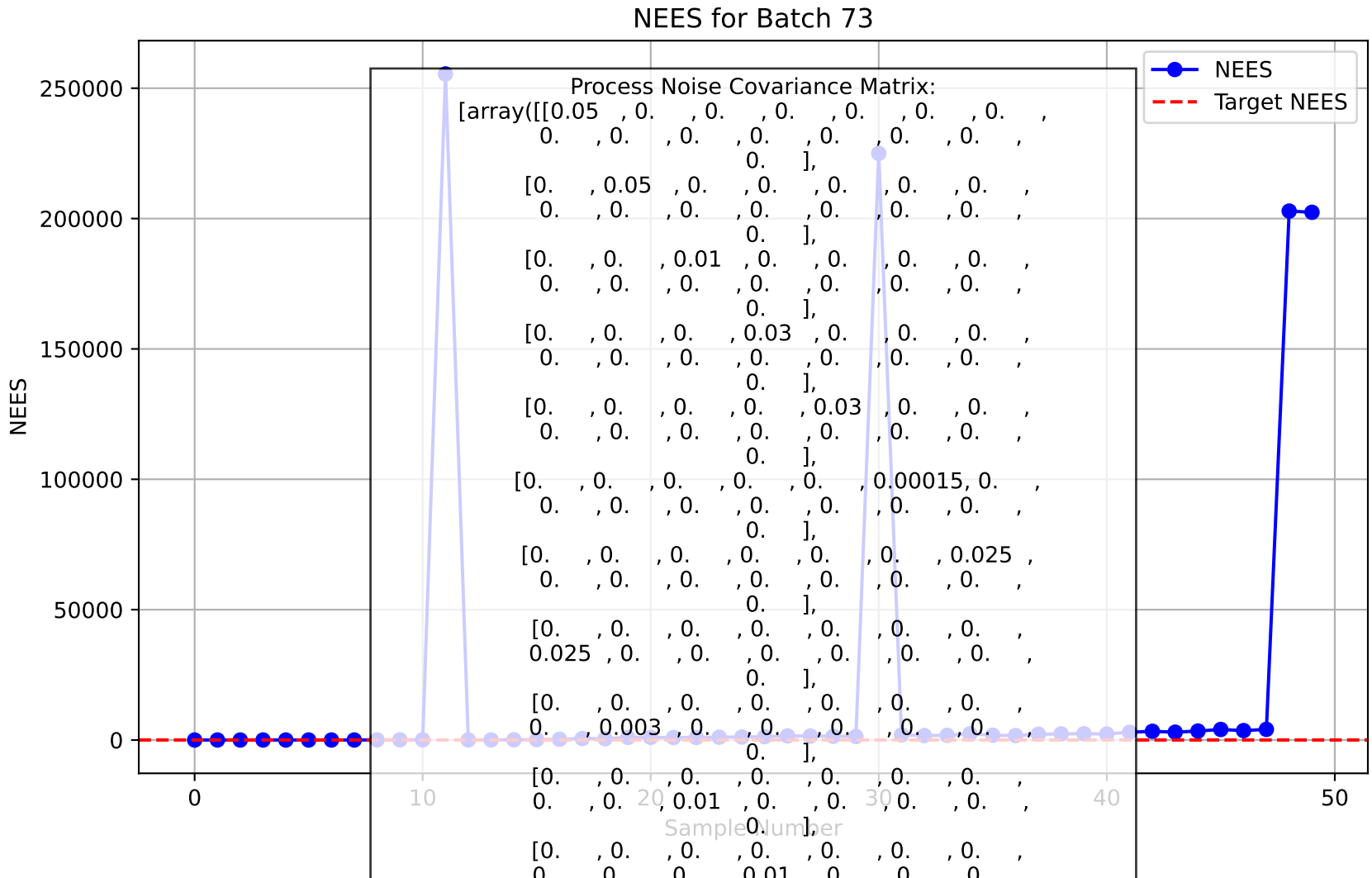

NEES for Batch 68
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]),

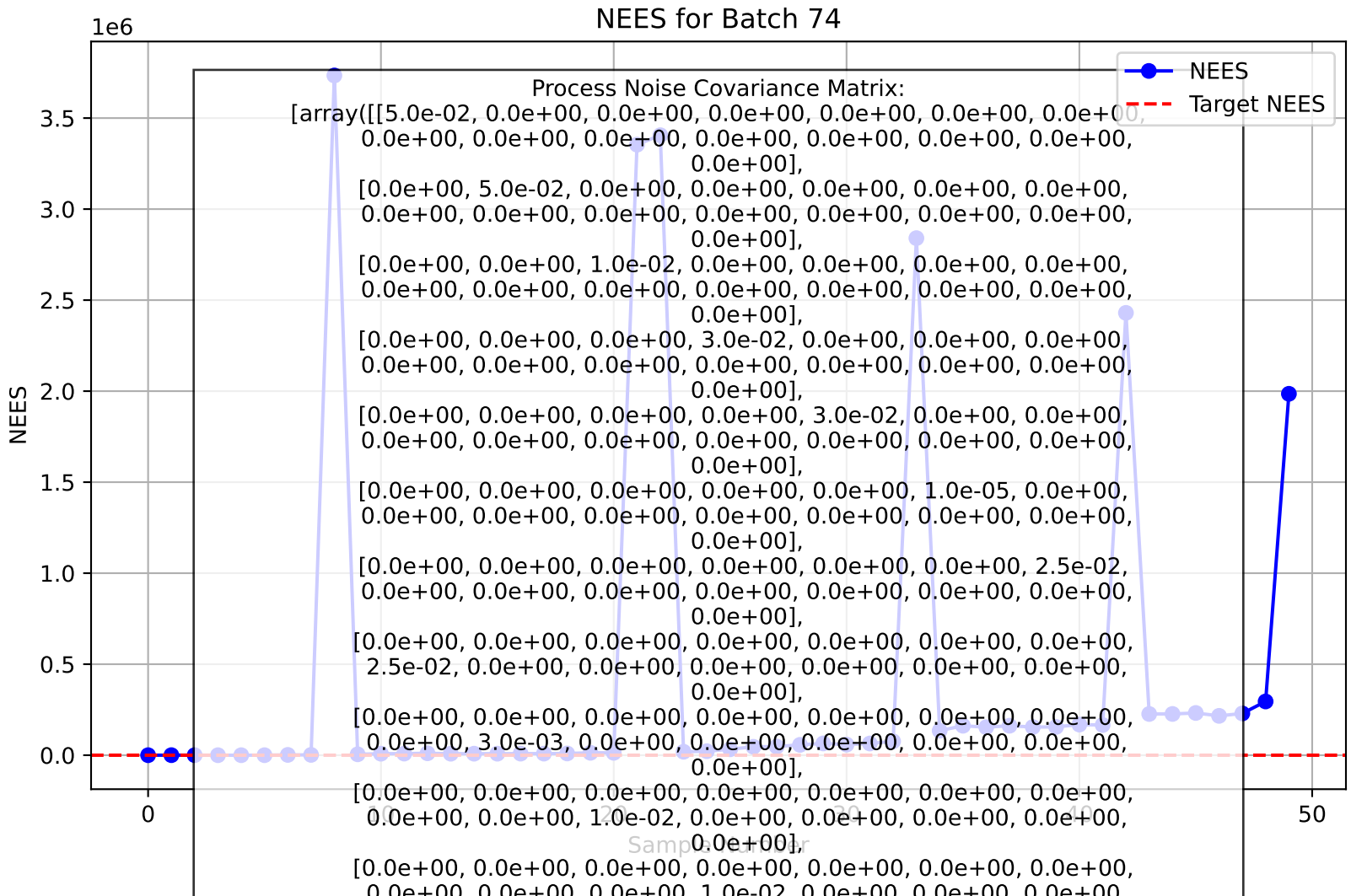

NEES for Batch 69
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.015, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
500
1000
1500
2000
2500
0
10
20
30
40
50

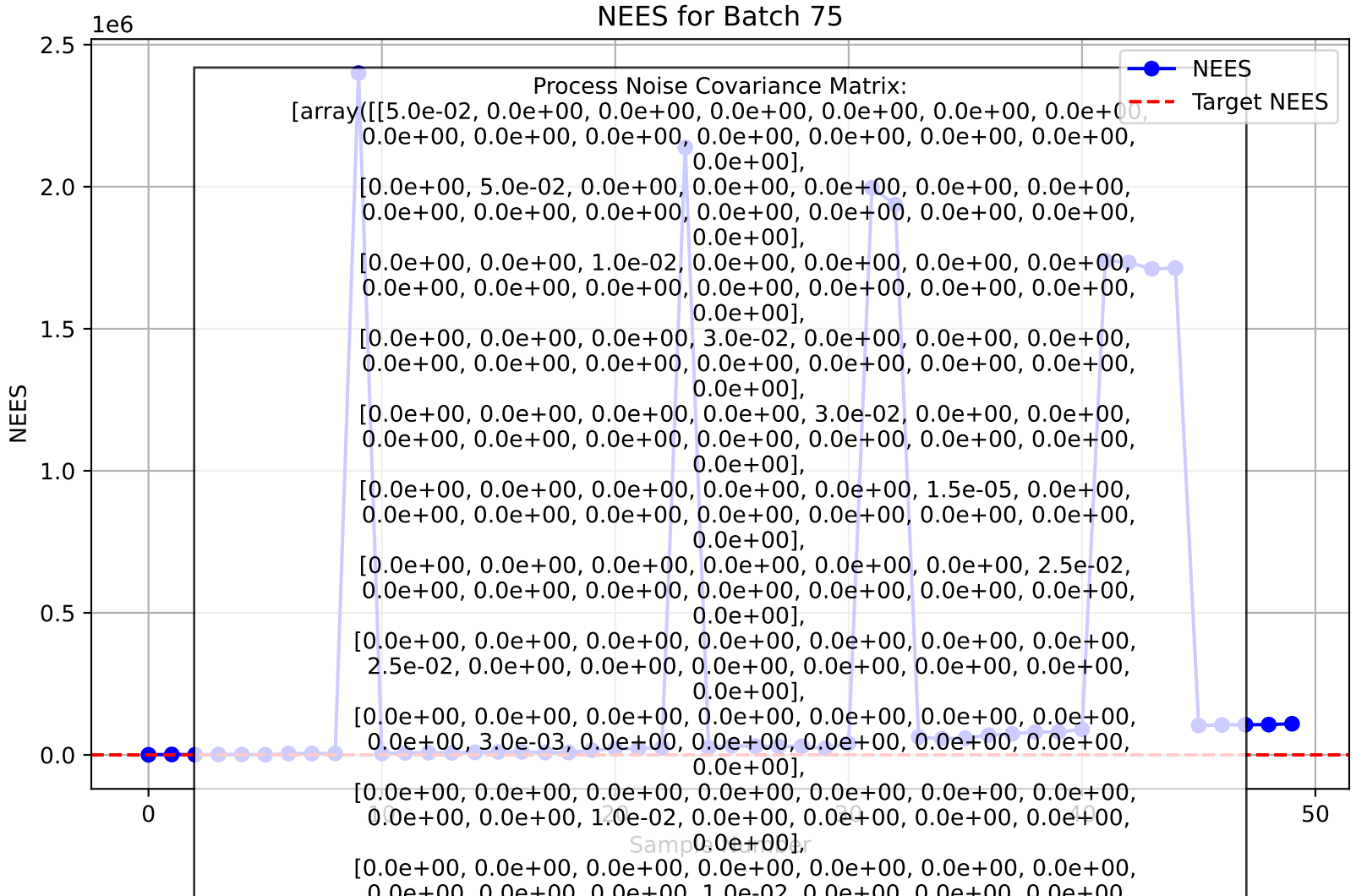

NEES for Batch 70
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.001, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
35000
30000
25000
20000
15000
10000
5000
0
0
10
20
30
40
50

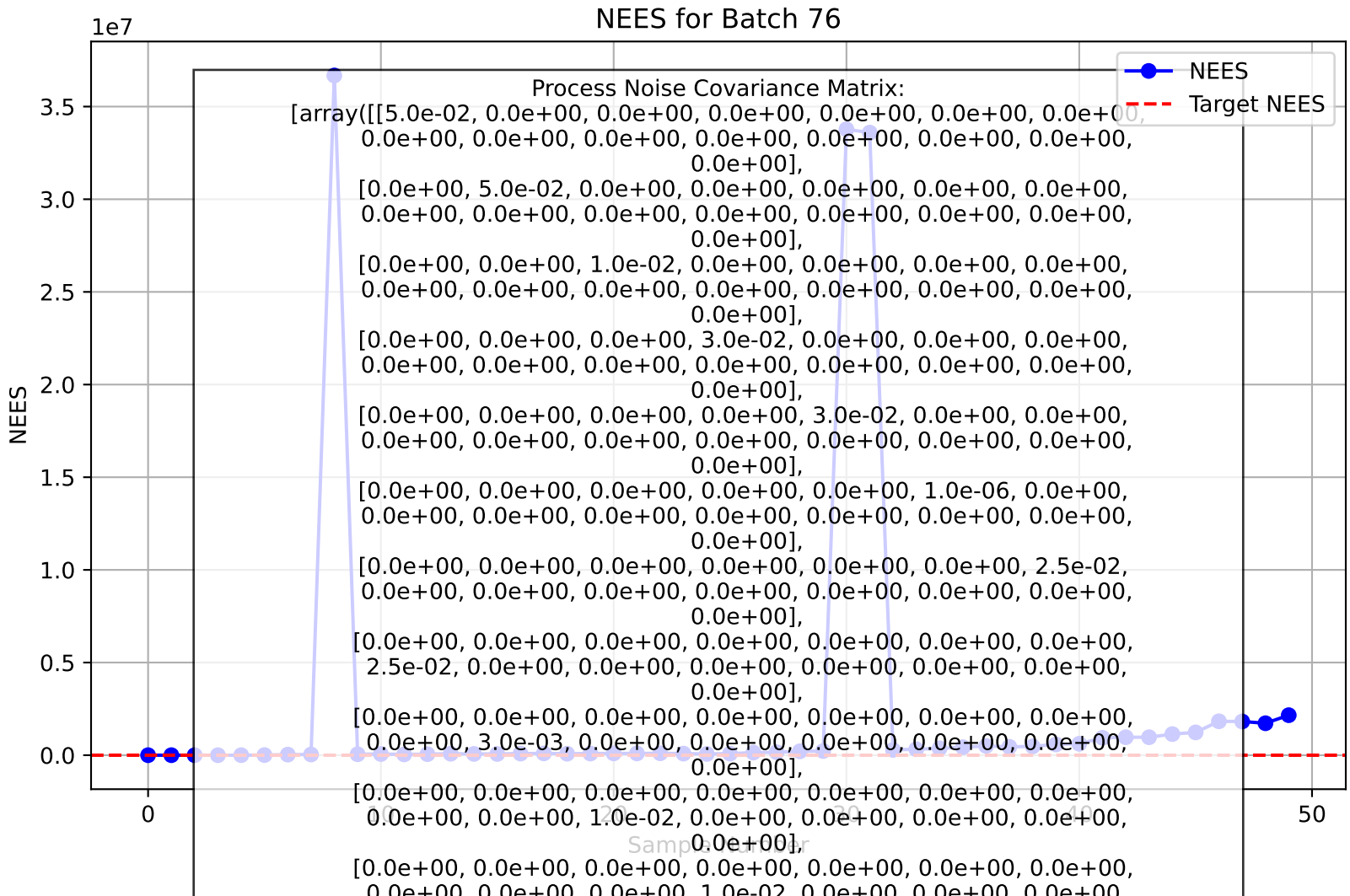

NEES for Batch 71
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.0015, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Batch Number
0
5000
10000
15000
20000
0
10
20
30
40
50

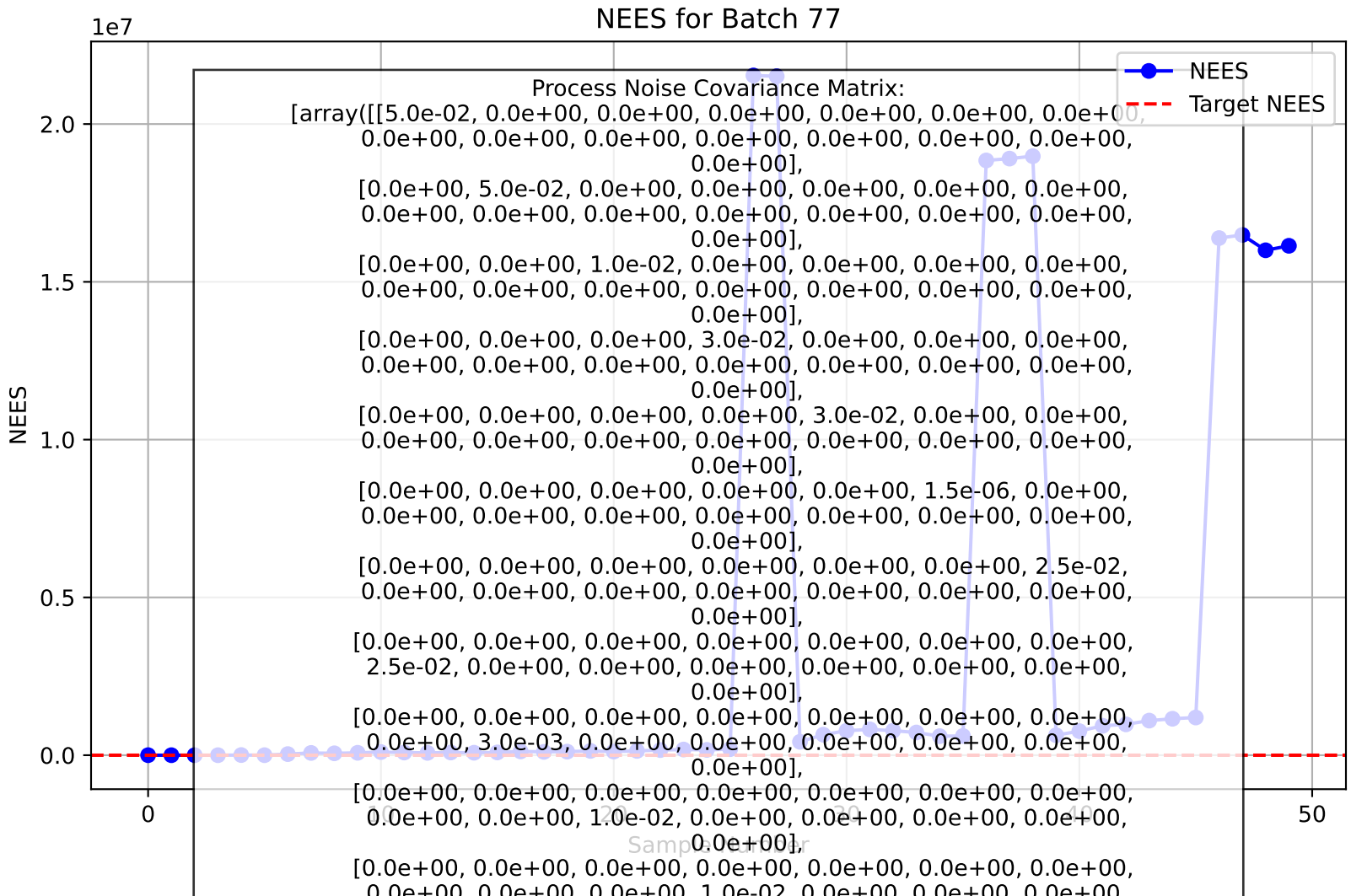

NEES for Batch 72
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.0001, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.
NEES
Batch Number
0
50000
100000
150000
200000
250000
300000
350000
0
10
20
30
40
50

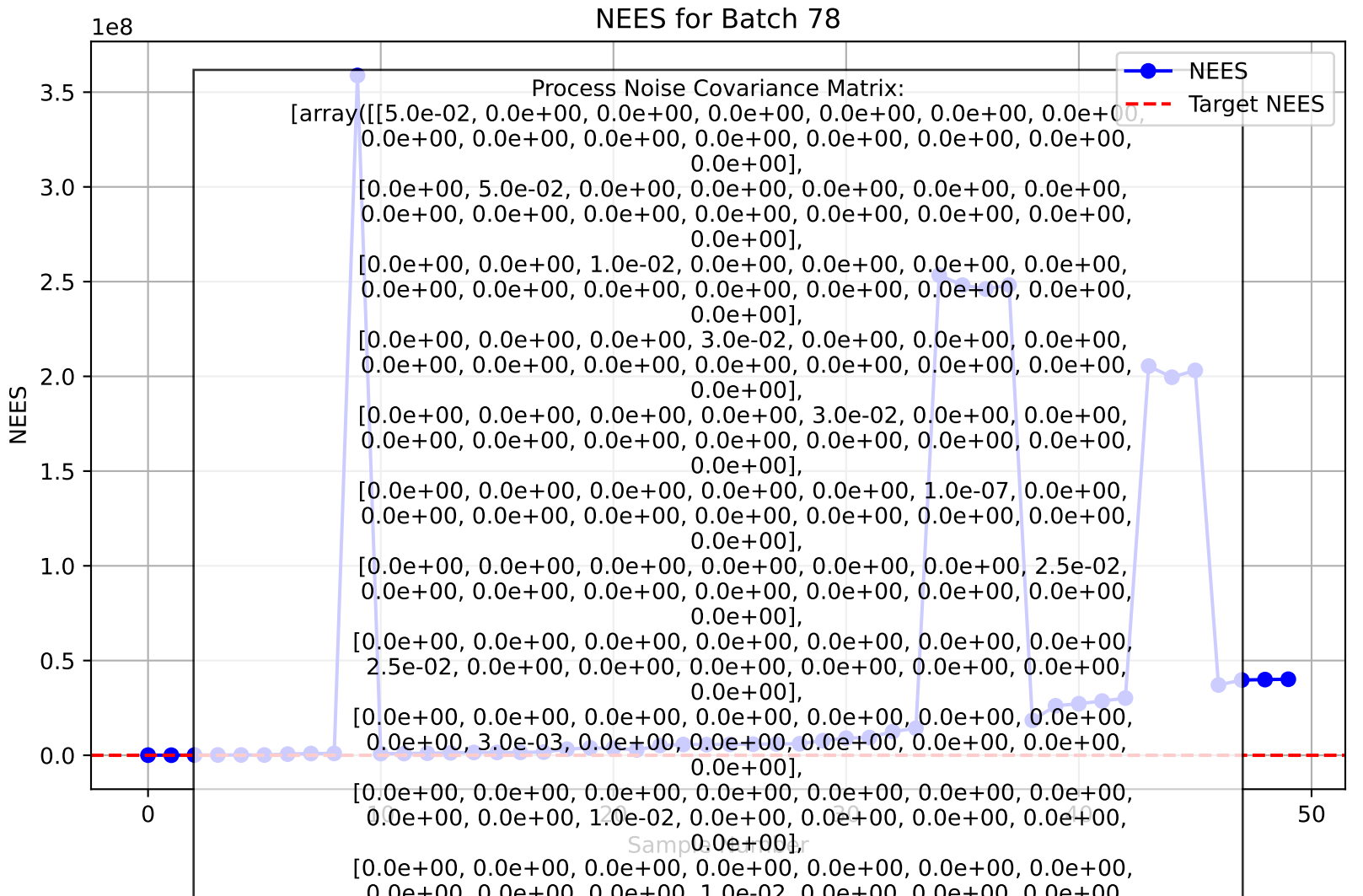

NEES for Batch 73
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.00015, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.003 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
250000
200000
150000
100000
50000
0
0
10
20
30
40
50
Sample Number

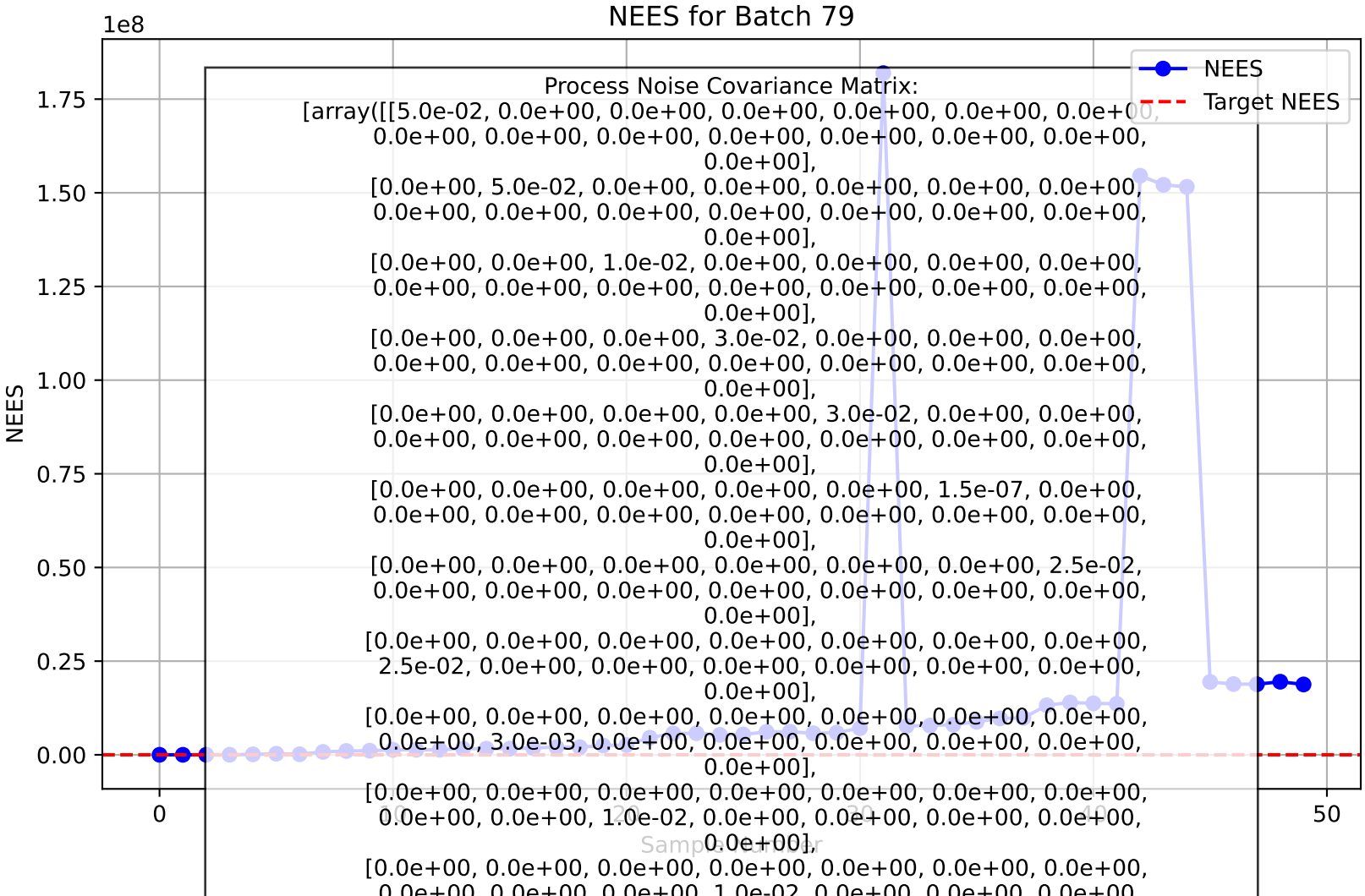

NEES for Batch 74
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-05, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
50

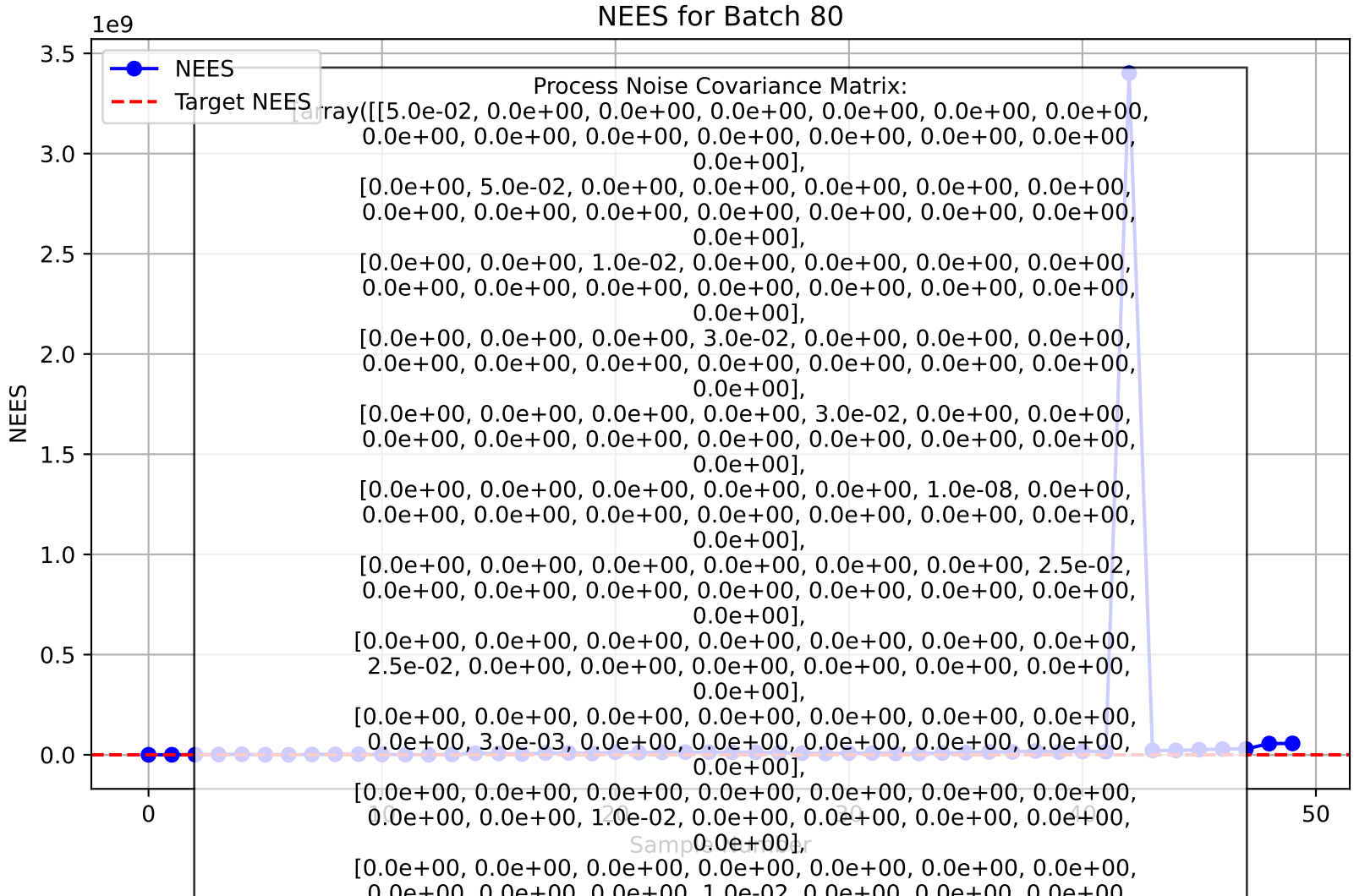

NEES for Batch 75
1e6
2.5
2.0
1.5
1.0
0.5
0.0
NEES
0
50
Sample Number
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-05, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

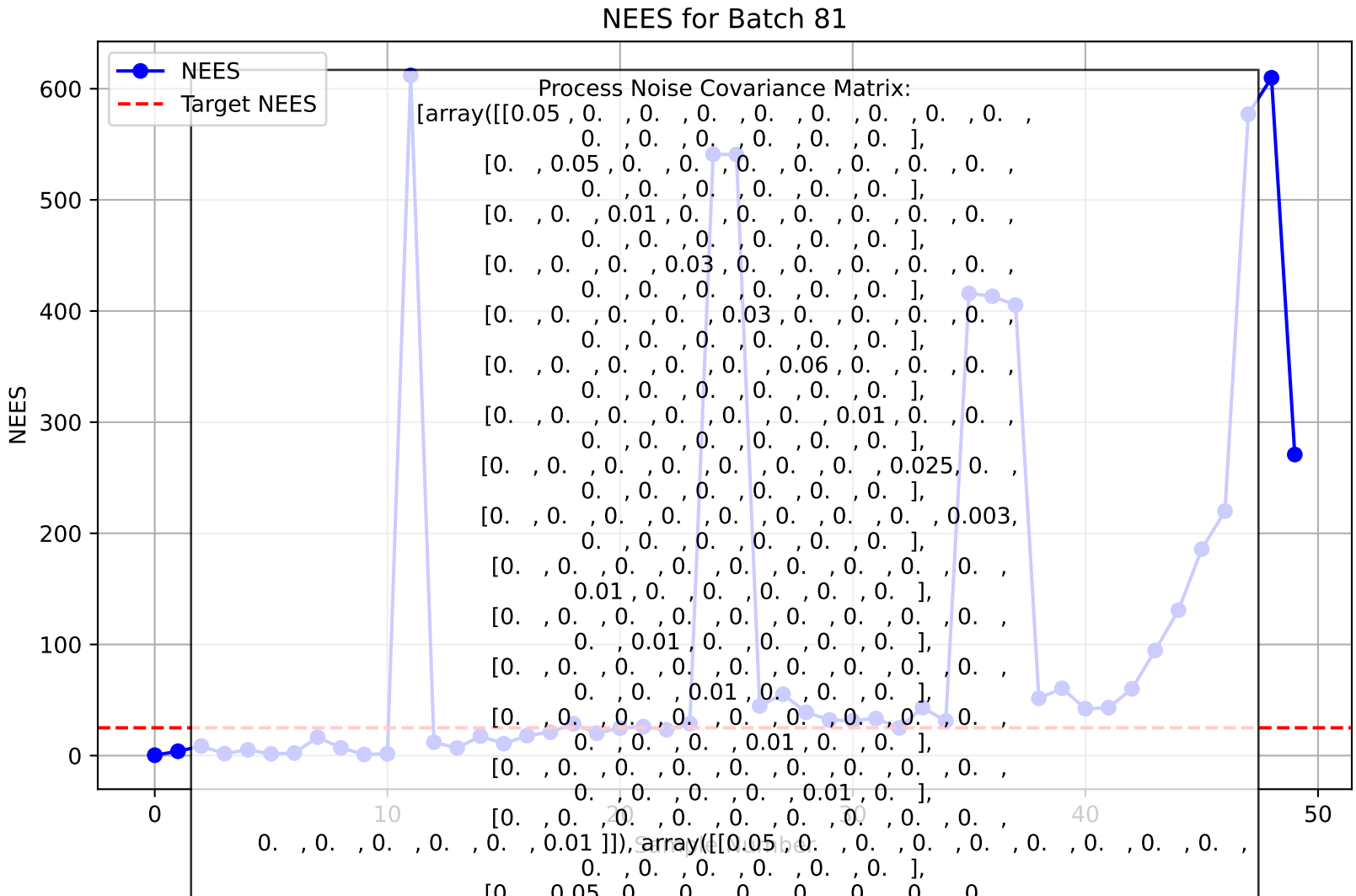

NEES for Batch 76
1e7
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-06, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5

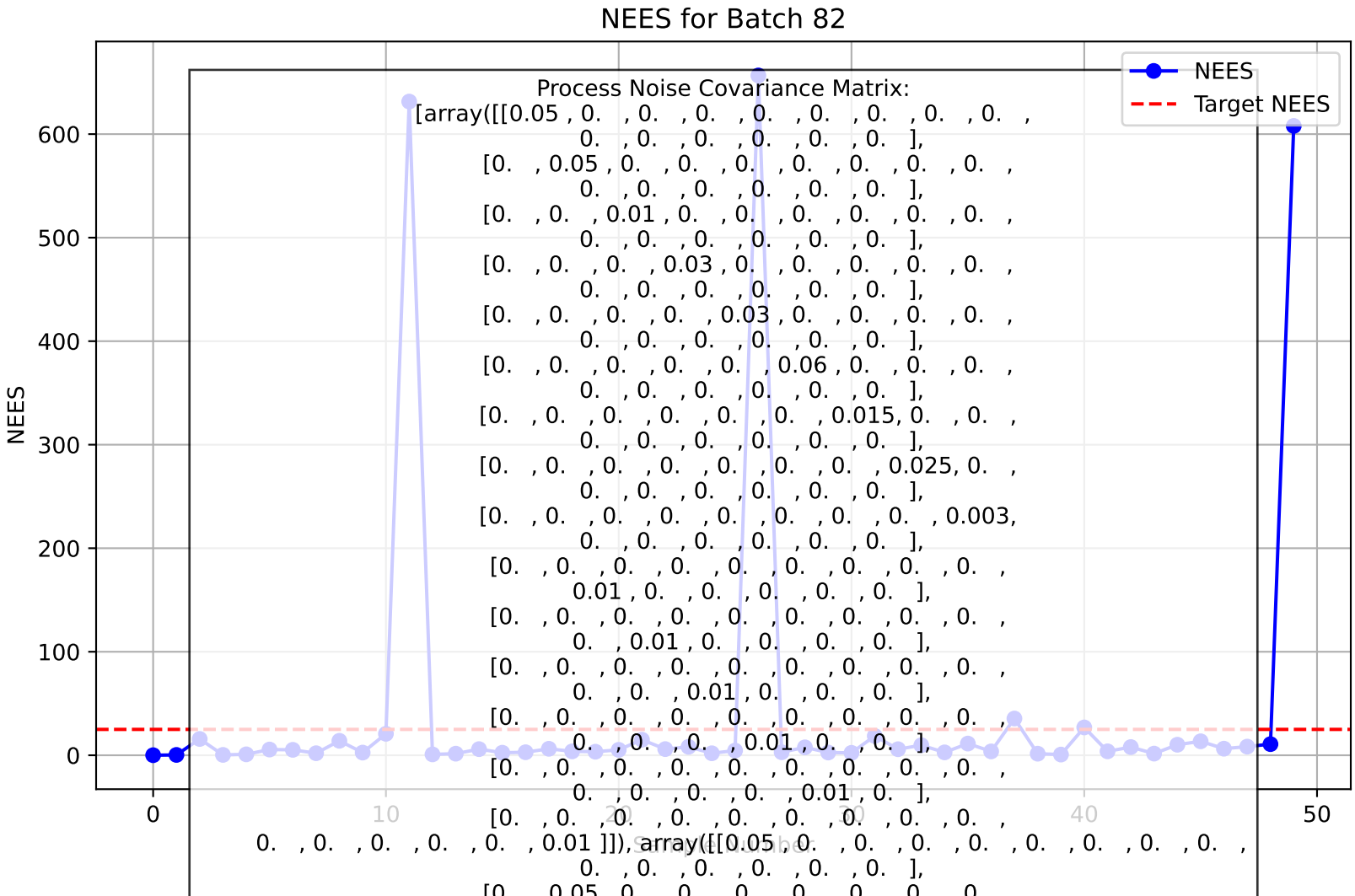

NEES for Batch 77
1e7
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-06, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
2.0
1.5
1.0
0.5
0.0
0
50
Sample Number

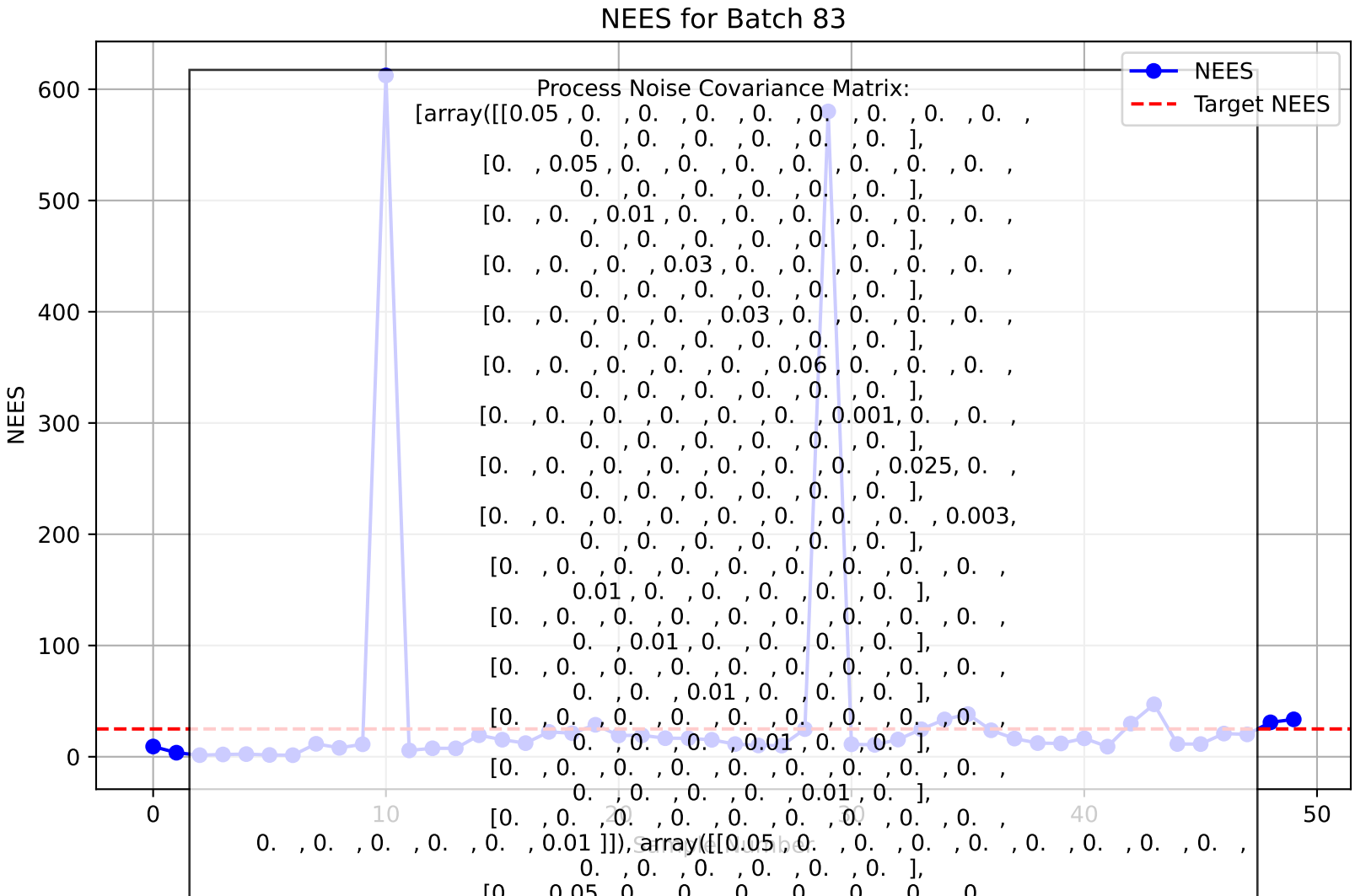

NEES for Batch 78
1e8
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-07, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5

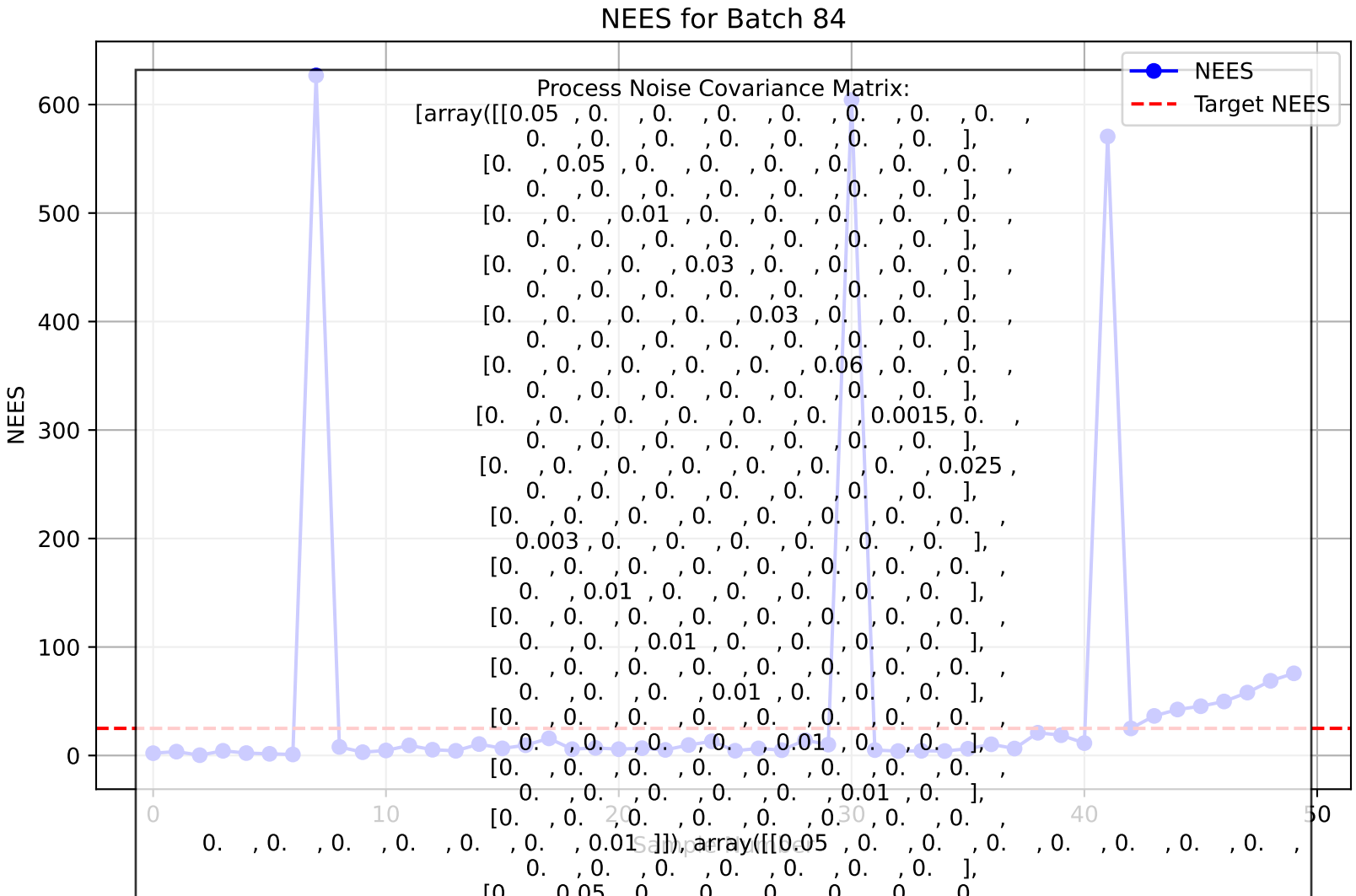

NEES for Batch 79
1e8
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-07, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
50

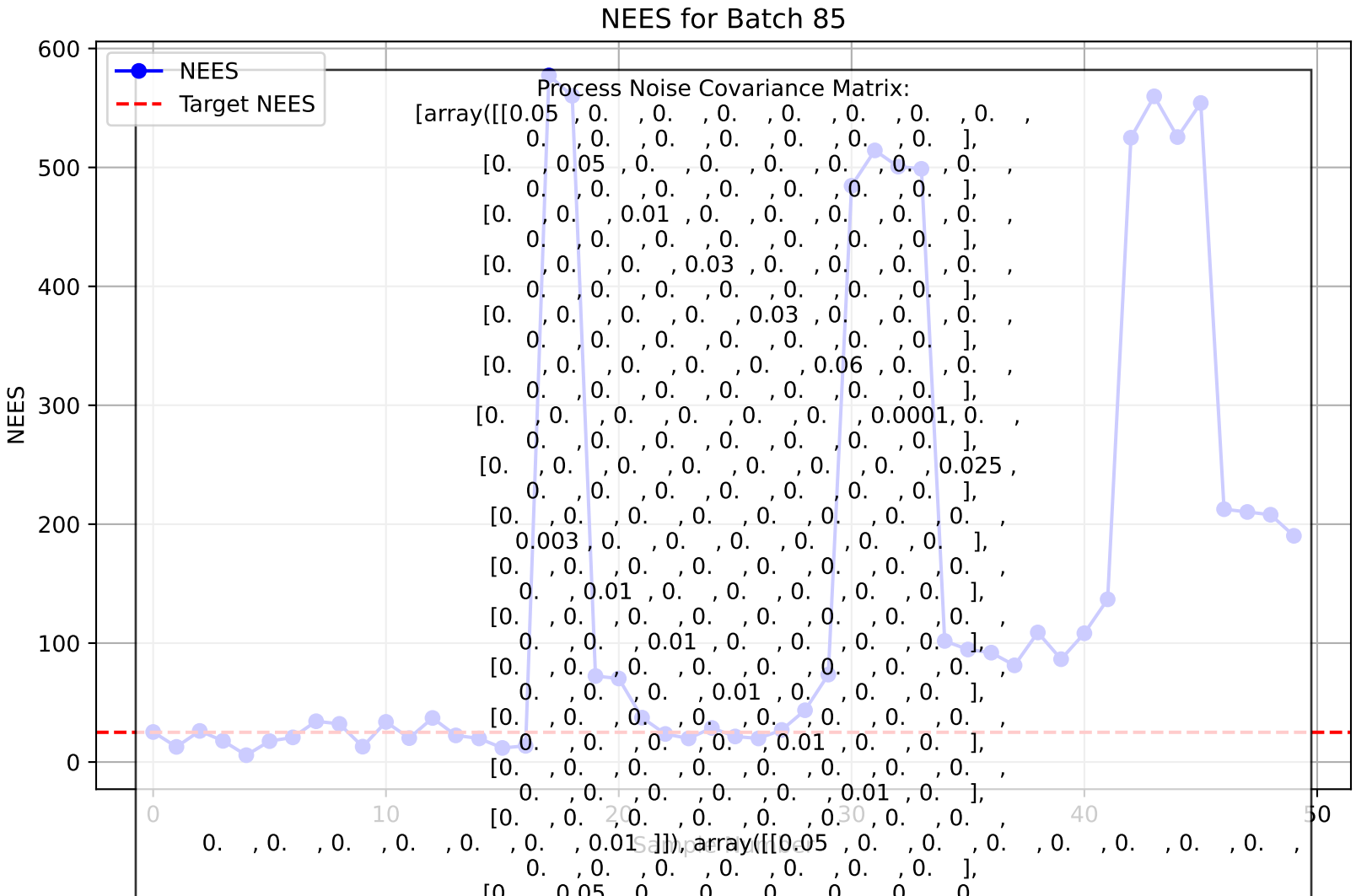

NEES for Batch 80
1e9
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-08, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
50
Sample Number

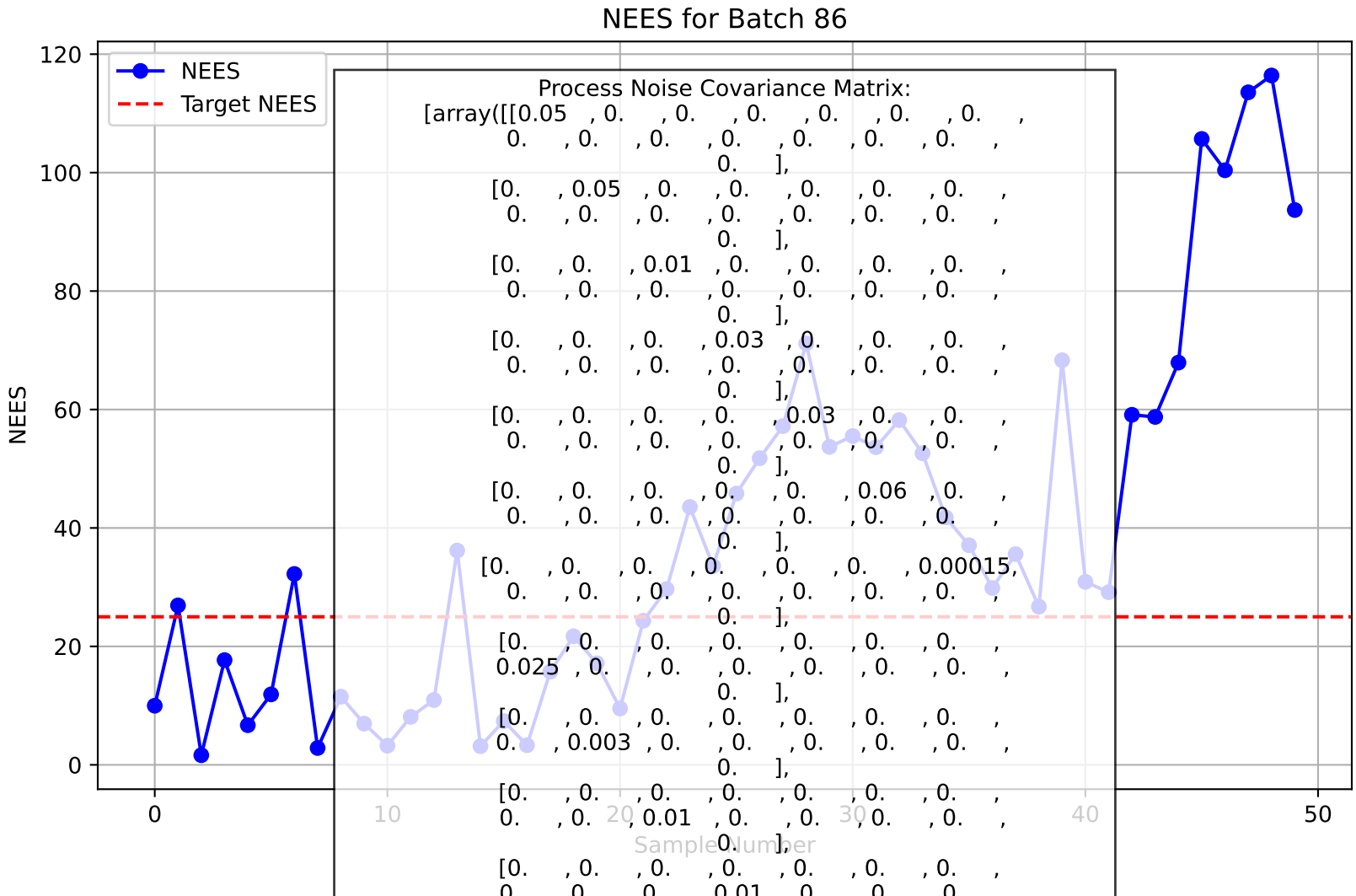

NEES for Batch 81
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.01 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
600
500
400
300
200
100
0
0
10
20
30
40
50

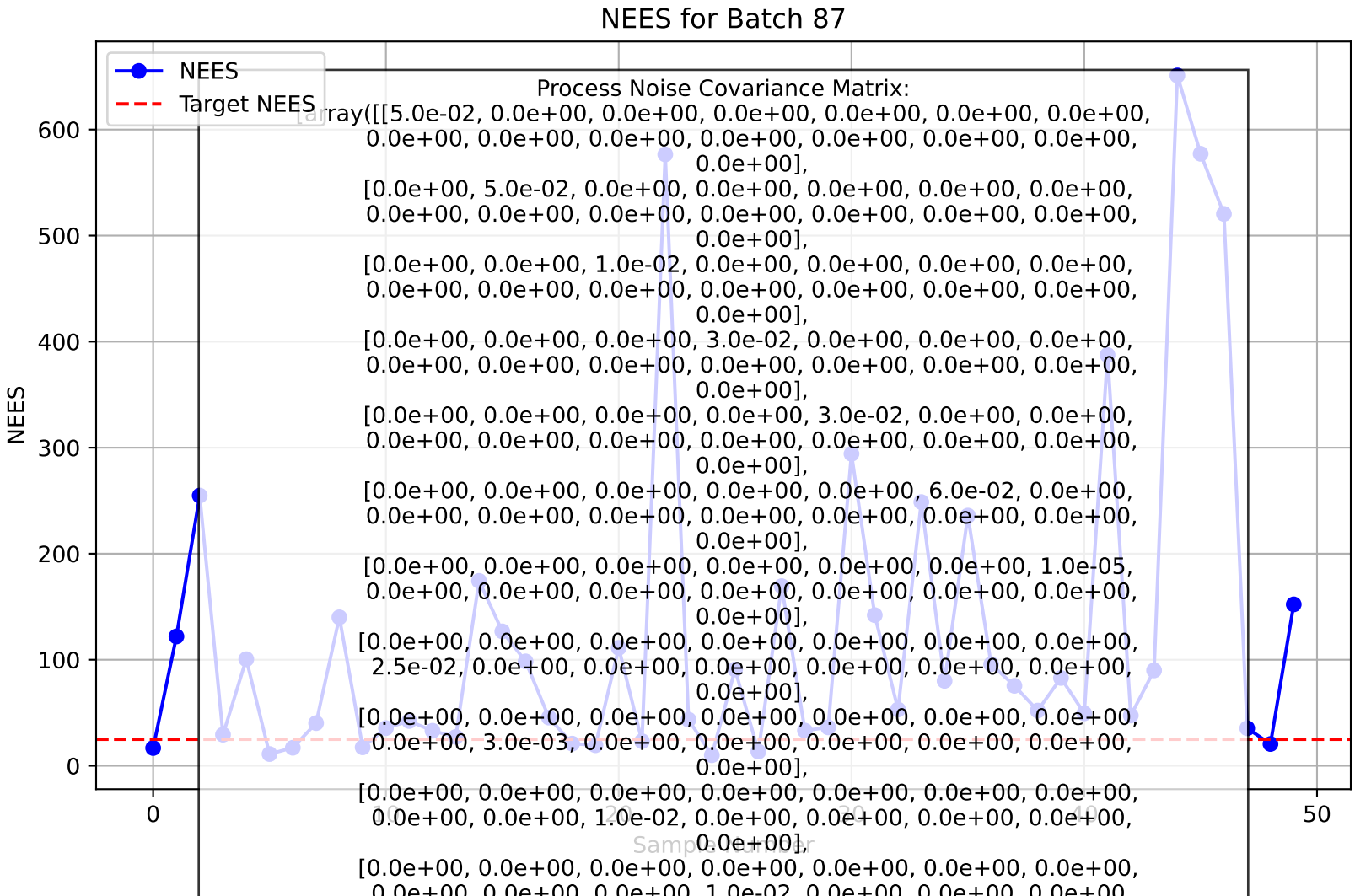

NEES for Batch 82
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.015, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50

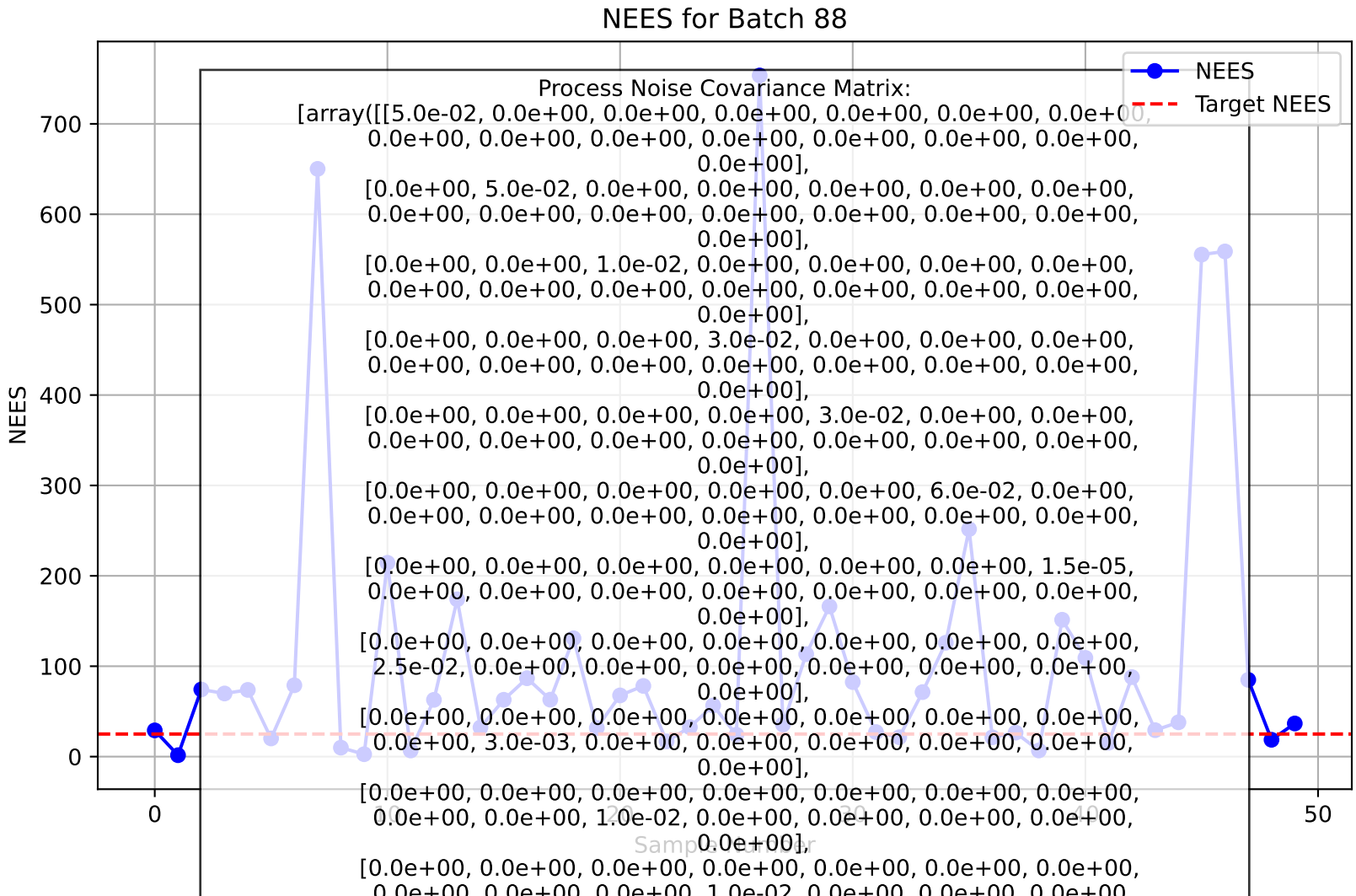

NEES for Batch 83
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.001, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50

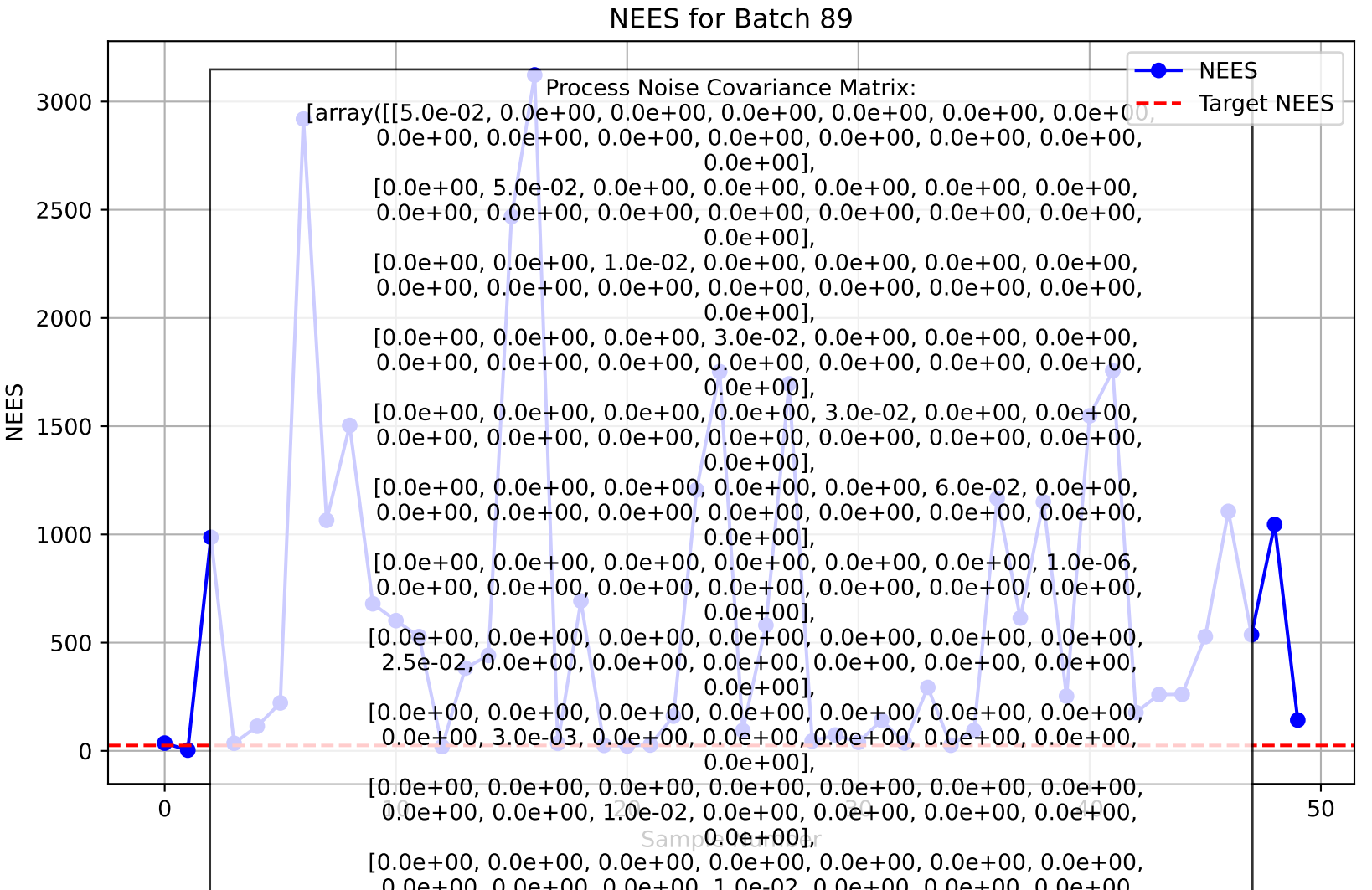

NEES for Batch 84
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0015, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50

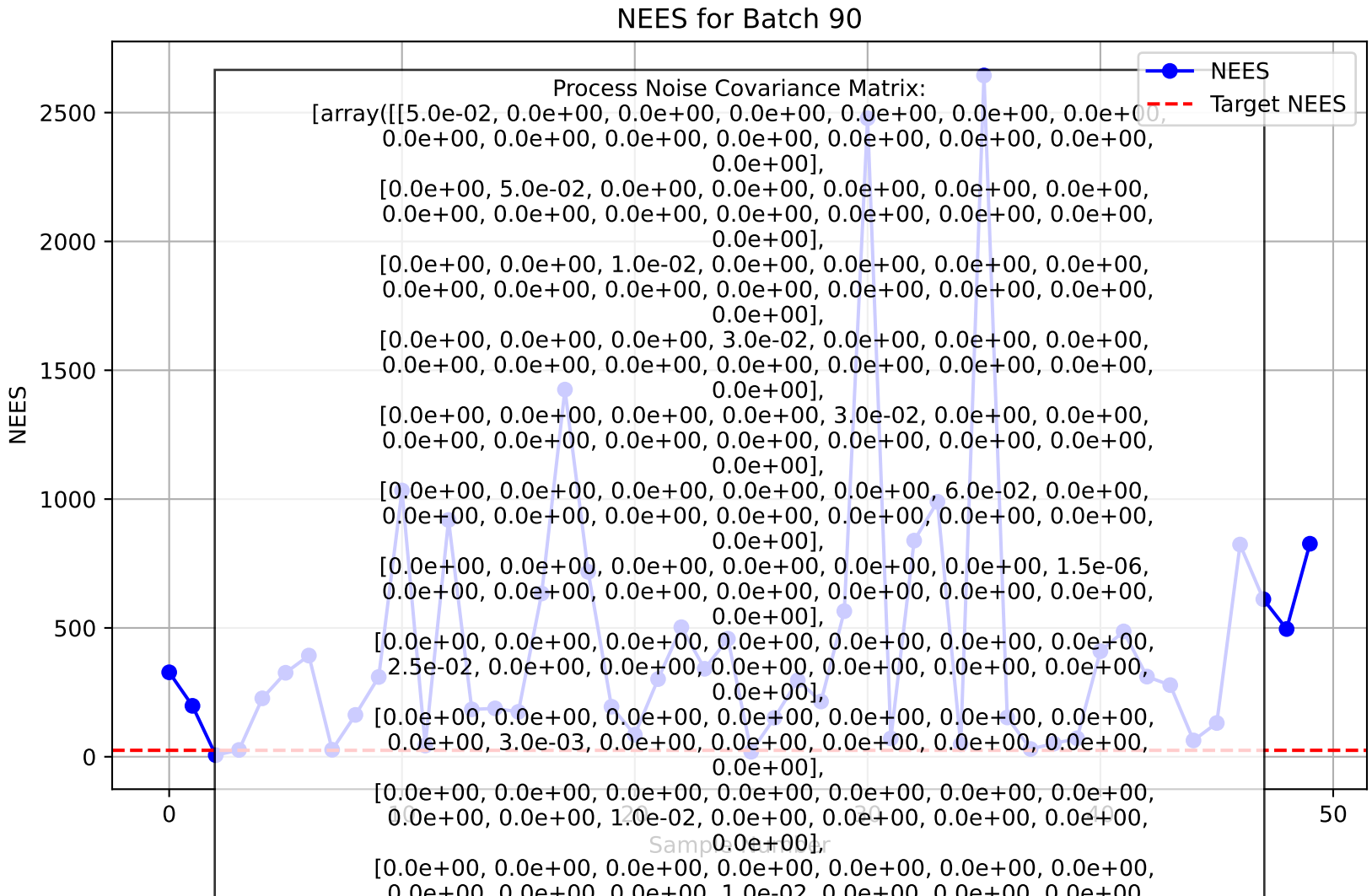

NEES for Batch 85
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0001, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
Sample Index
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50

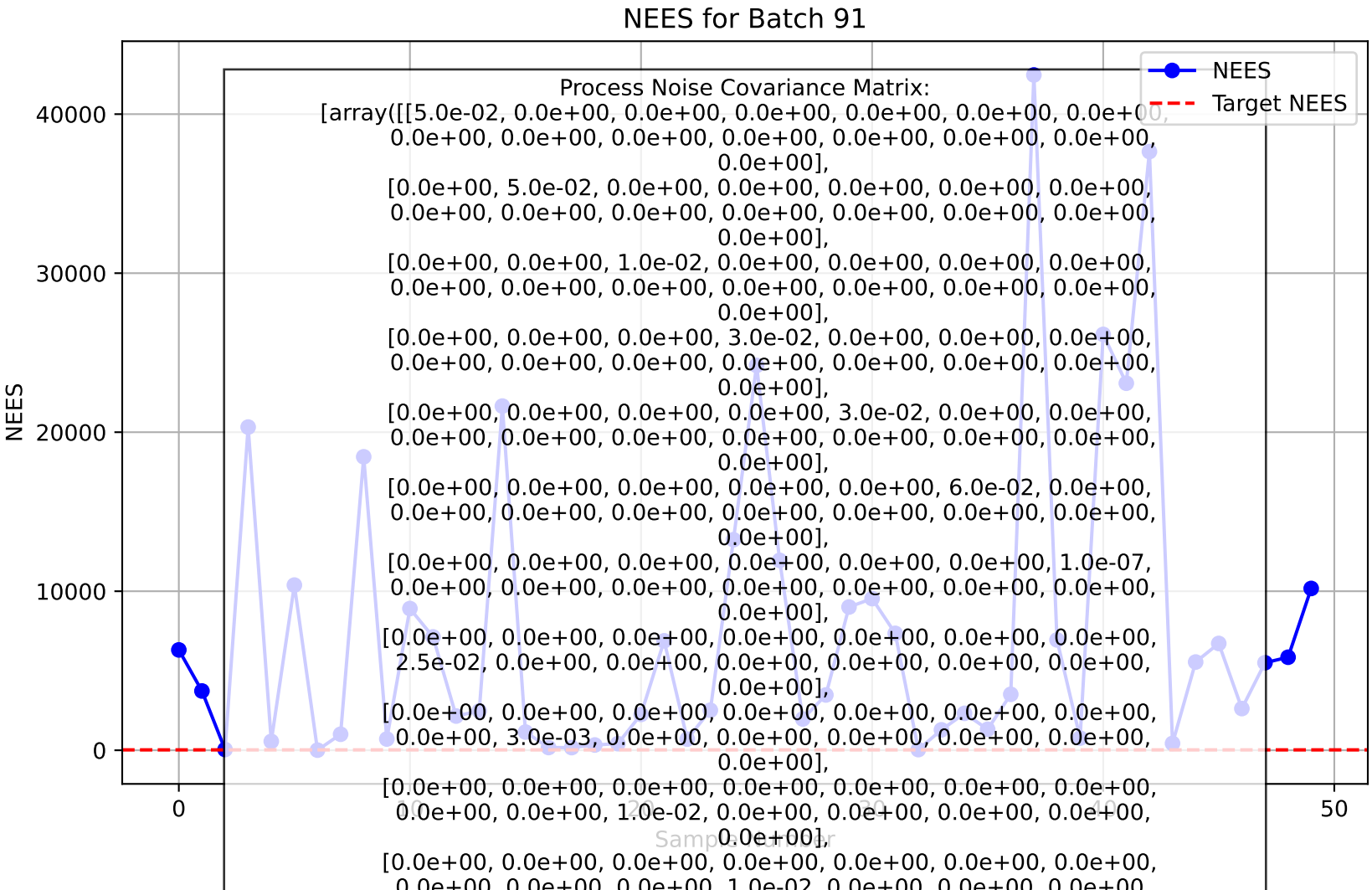

NEES for Batch 86
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.00015,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.003 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
Sample Number
NEES
0
20
40
60
80
100
120
0
10
20
30
40
50

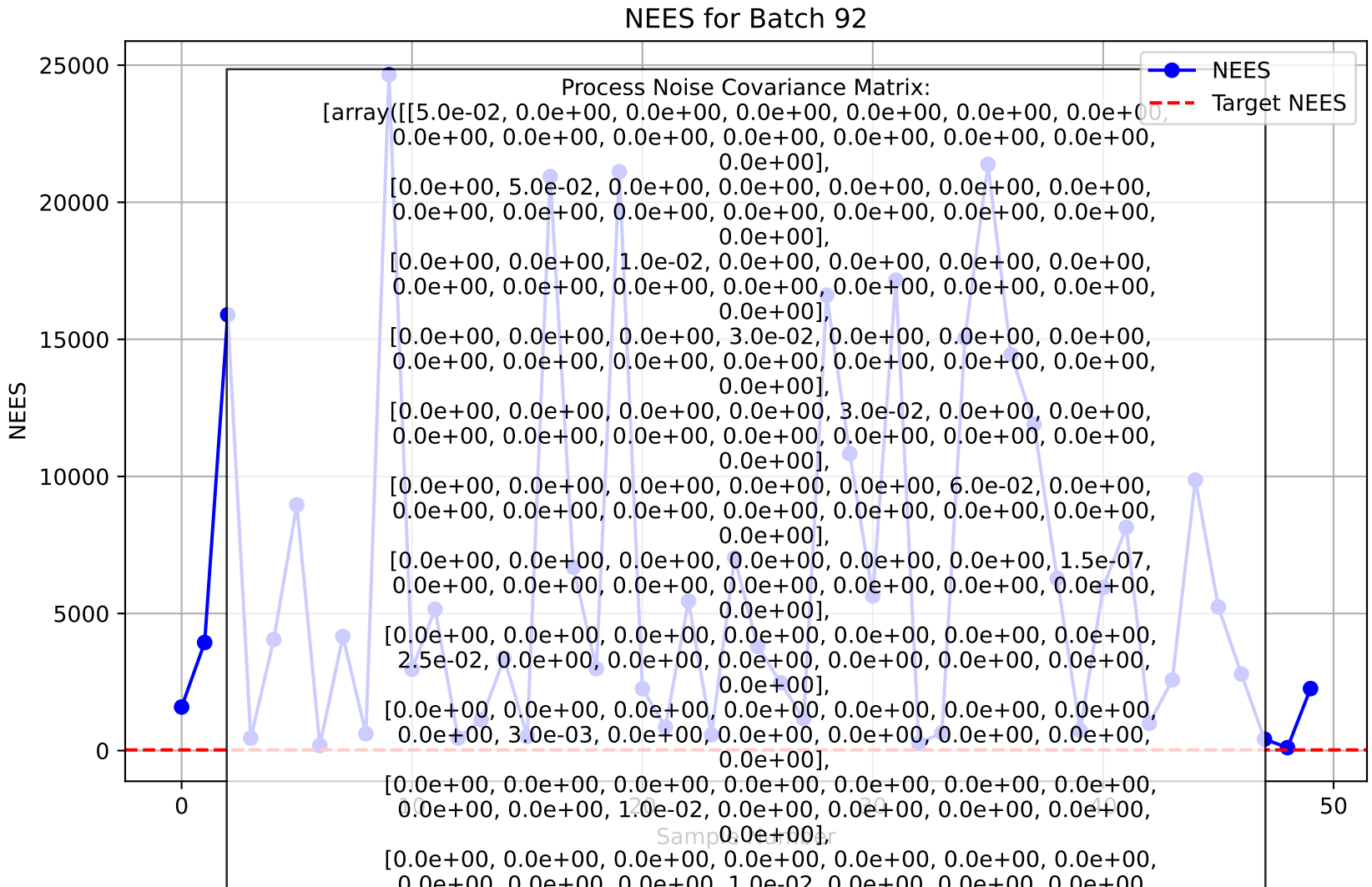

NEES for Batch 87
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-05,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

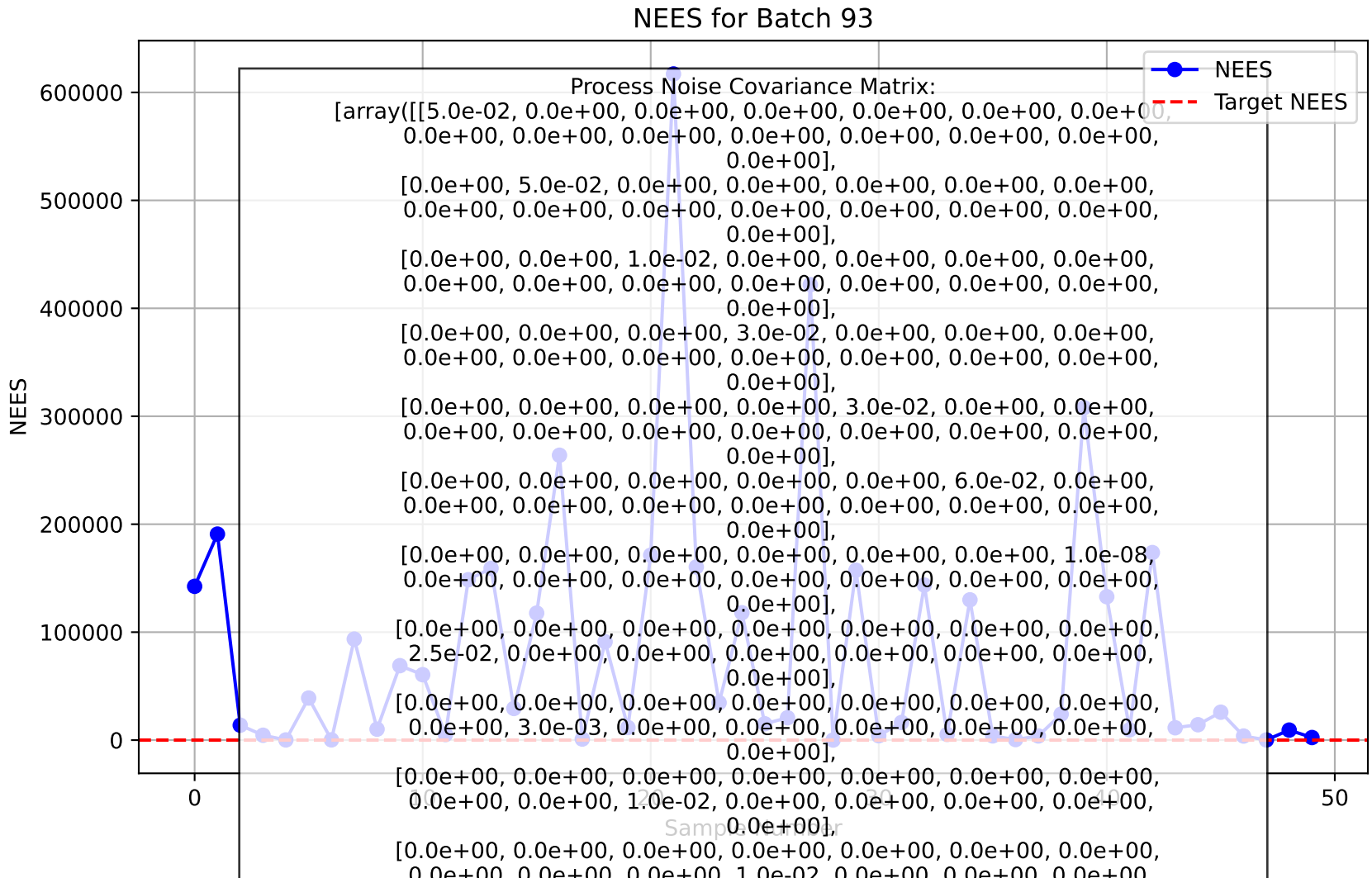

NEES for Batch 88
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-05,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
700
0
50

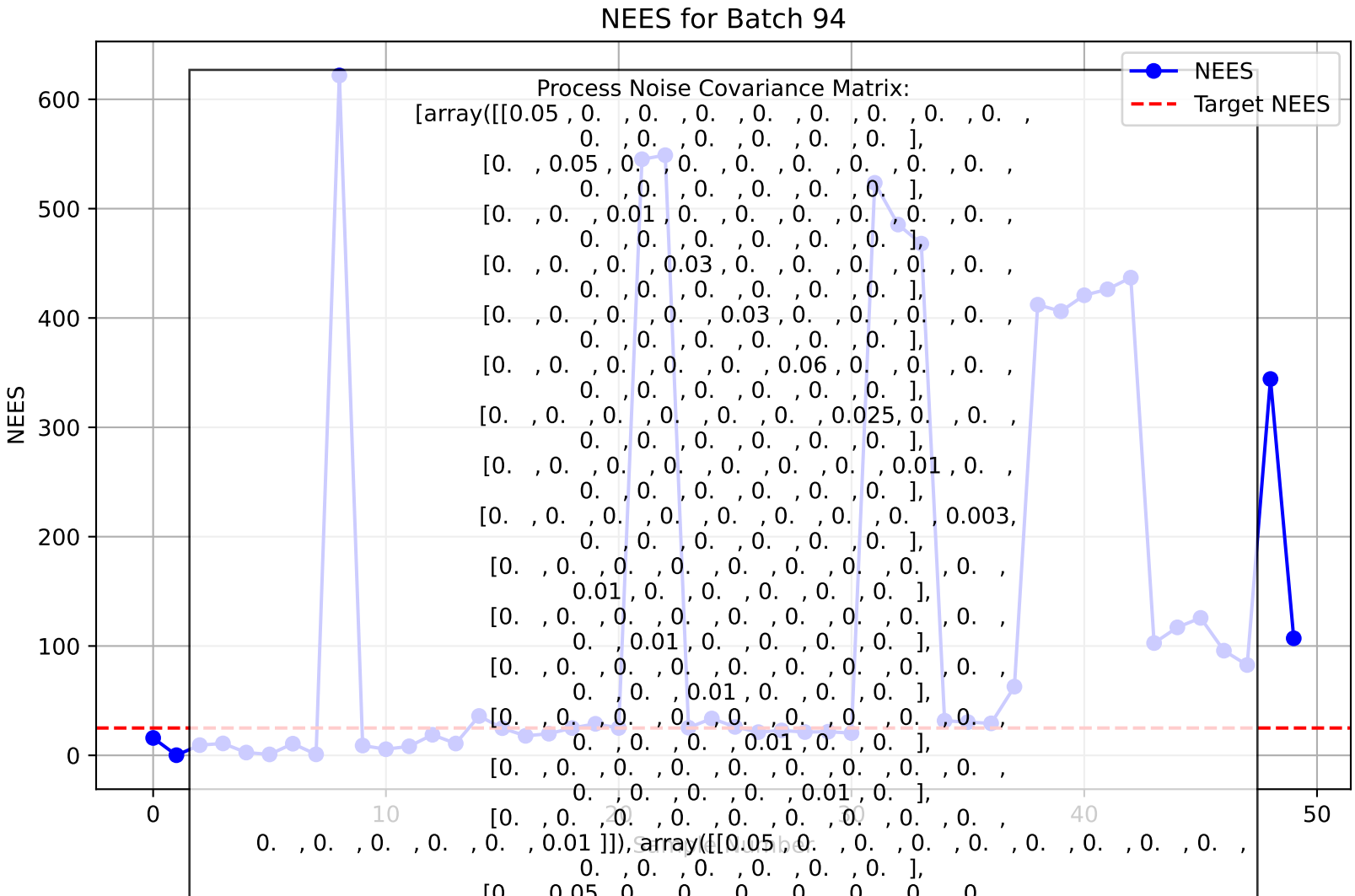

NEES for Batch 89
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-06,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
500
1000
1500
2000
2500
3000
0
50

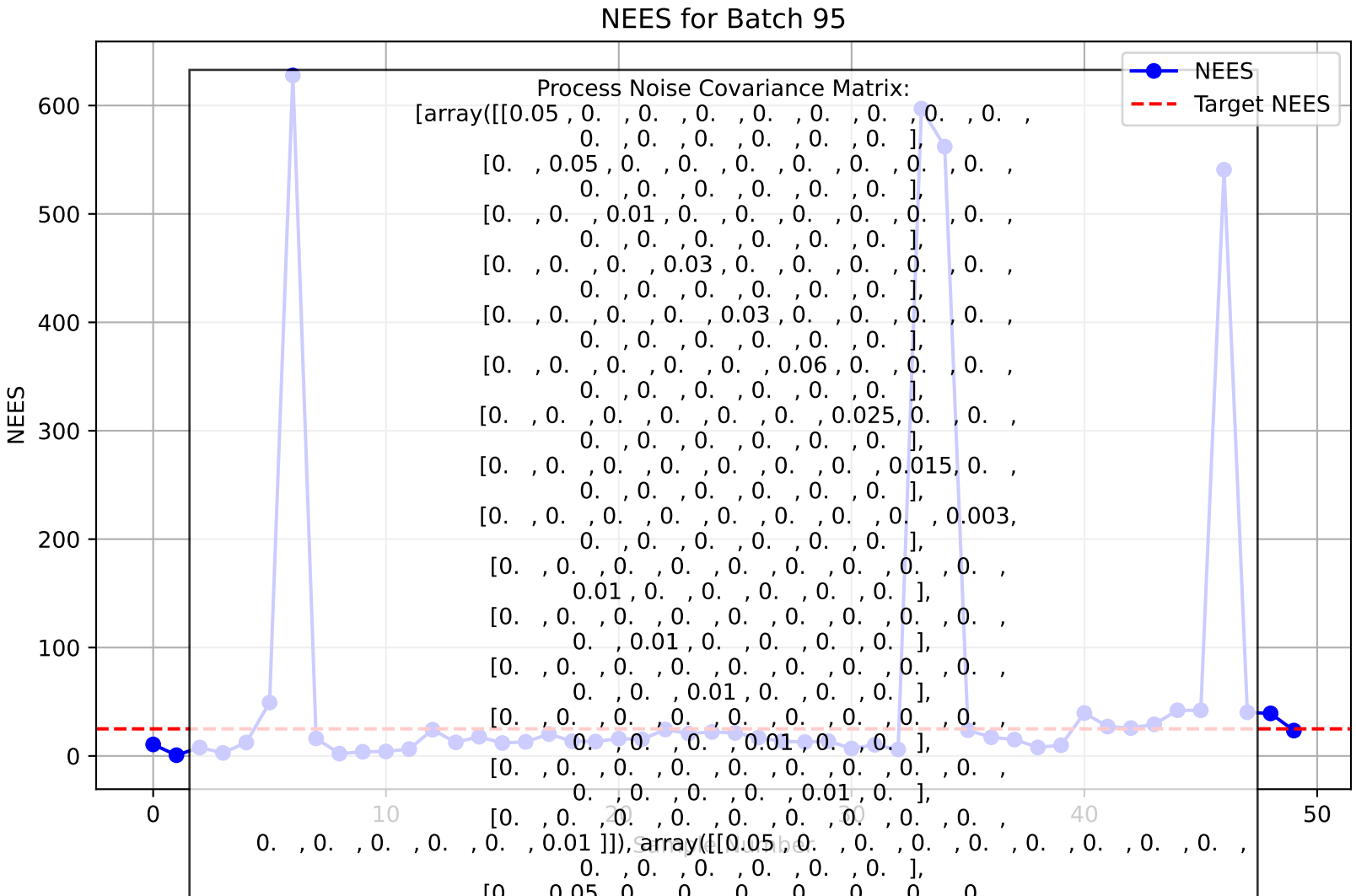

NEES for Batch 90
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-06,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
500
1000
1500
2000
2500
0
50

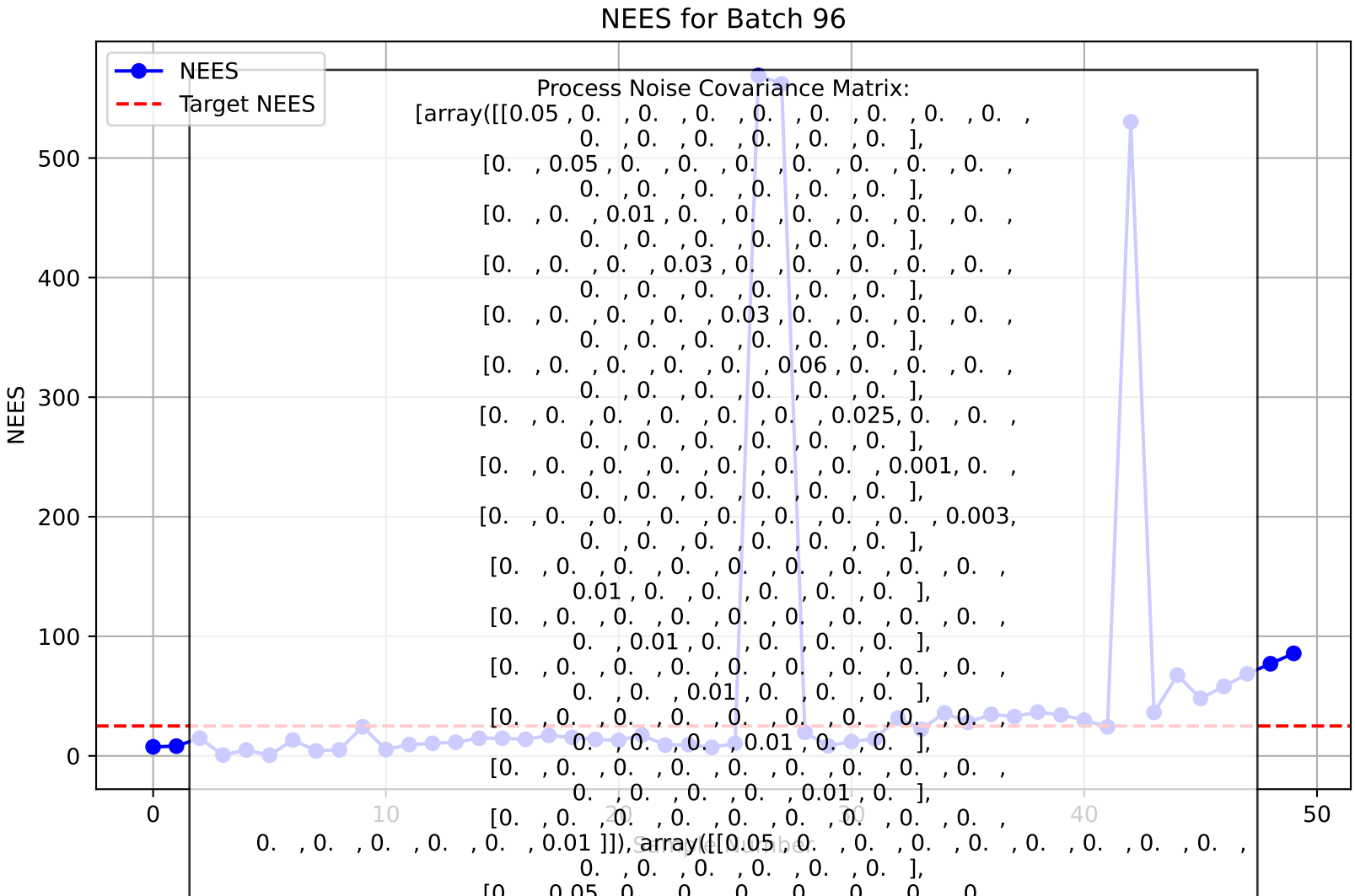

NEES for Batch 91
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-07,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
40000
30000
20000
10000
0
0
50
Sample Number

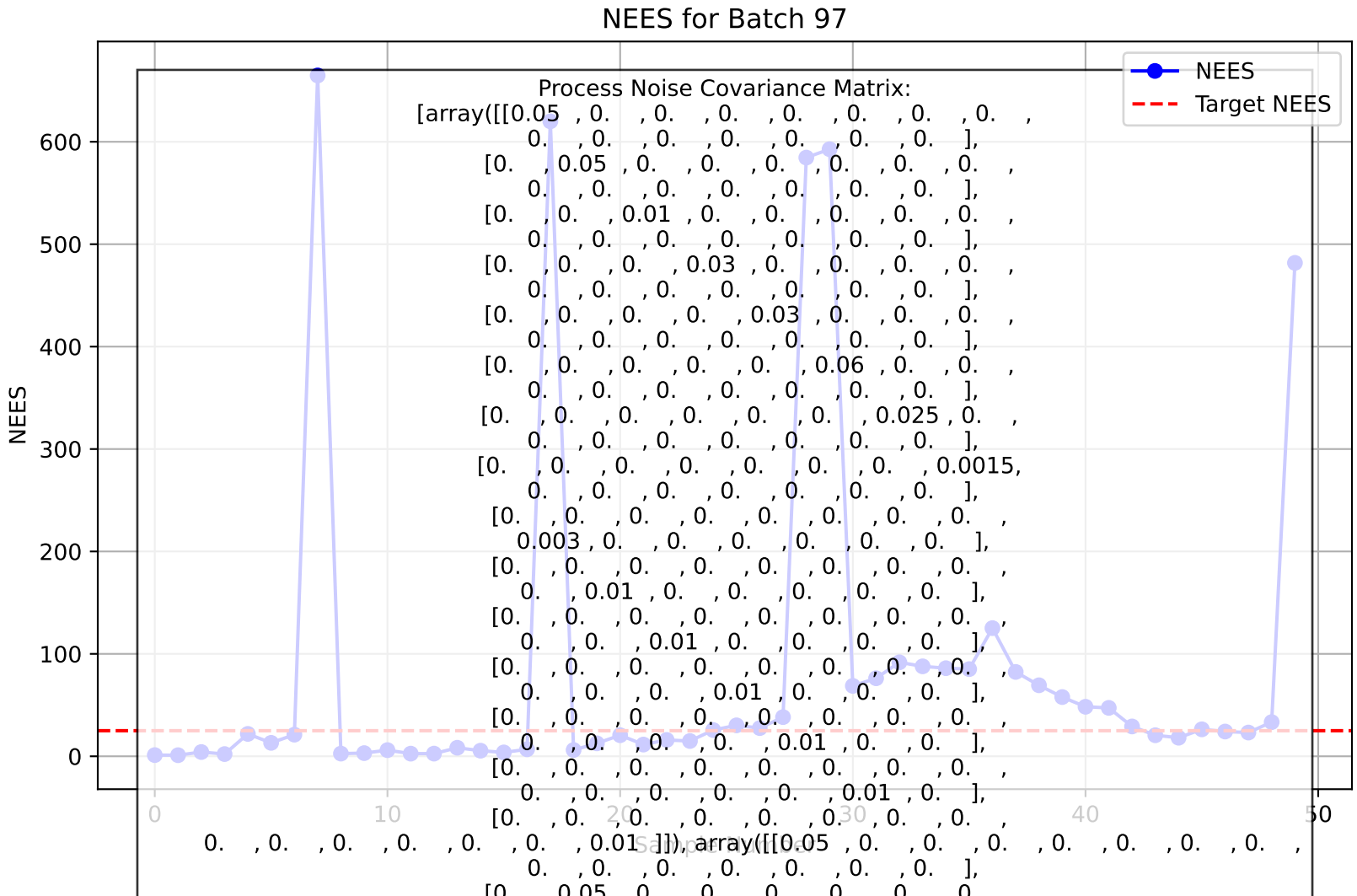

NEES for Batch 92
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.5e-07,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
25000
20000
15000
10000
5000
0
0
50
Sample Number

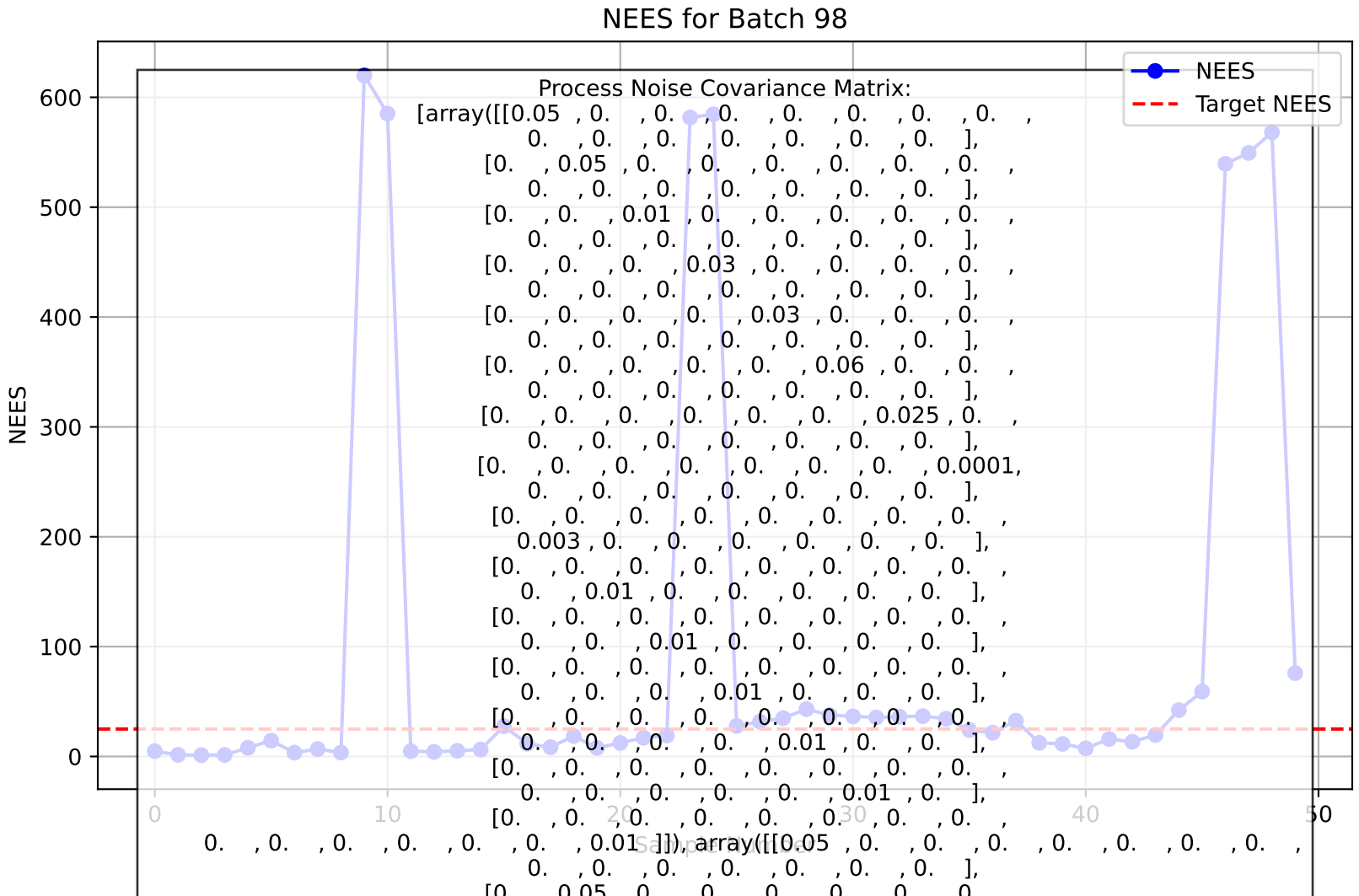

NEES for Batch 93
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 1.0e-08,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600000
500000
400000
300000
200000
100000
0
0
50
Sample Number

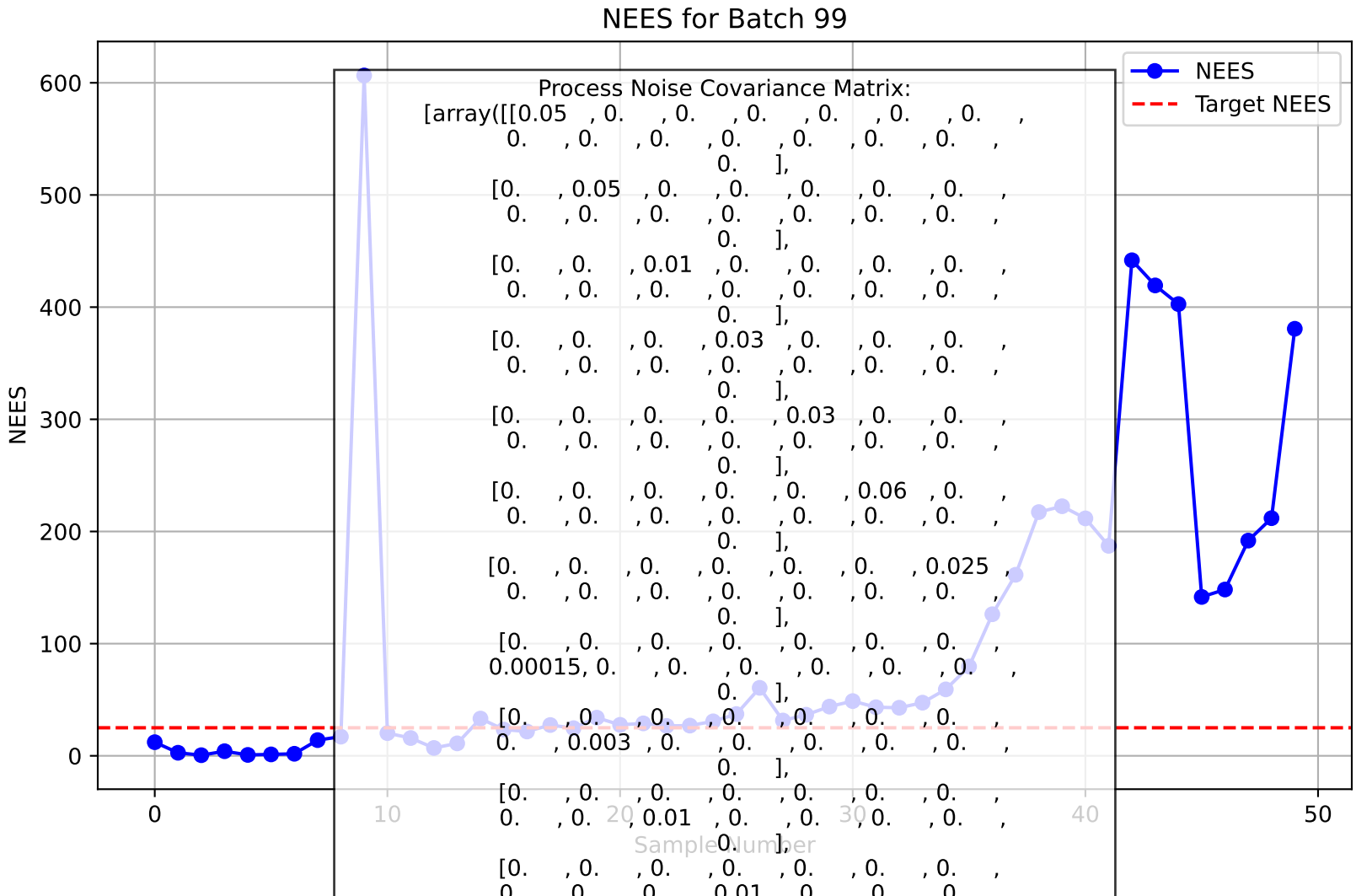

NEES for Batch 94
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600

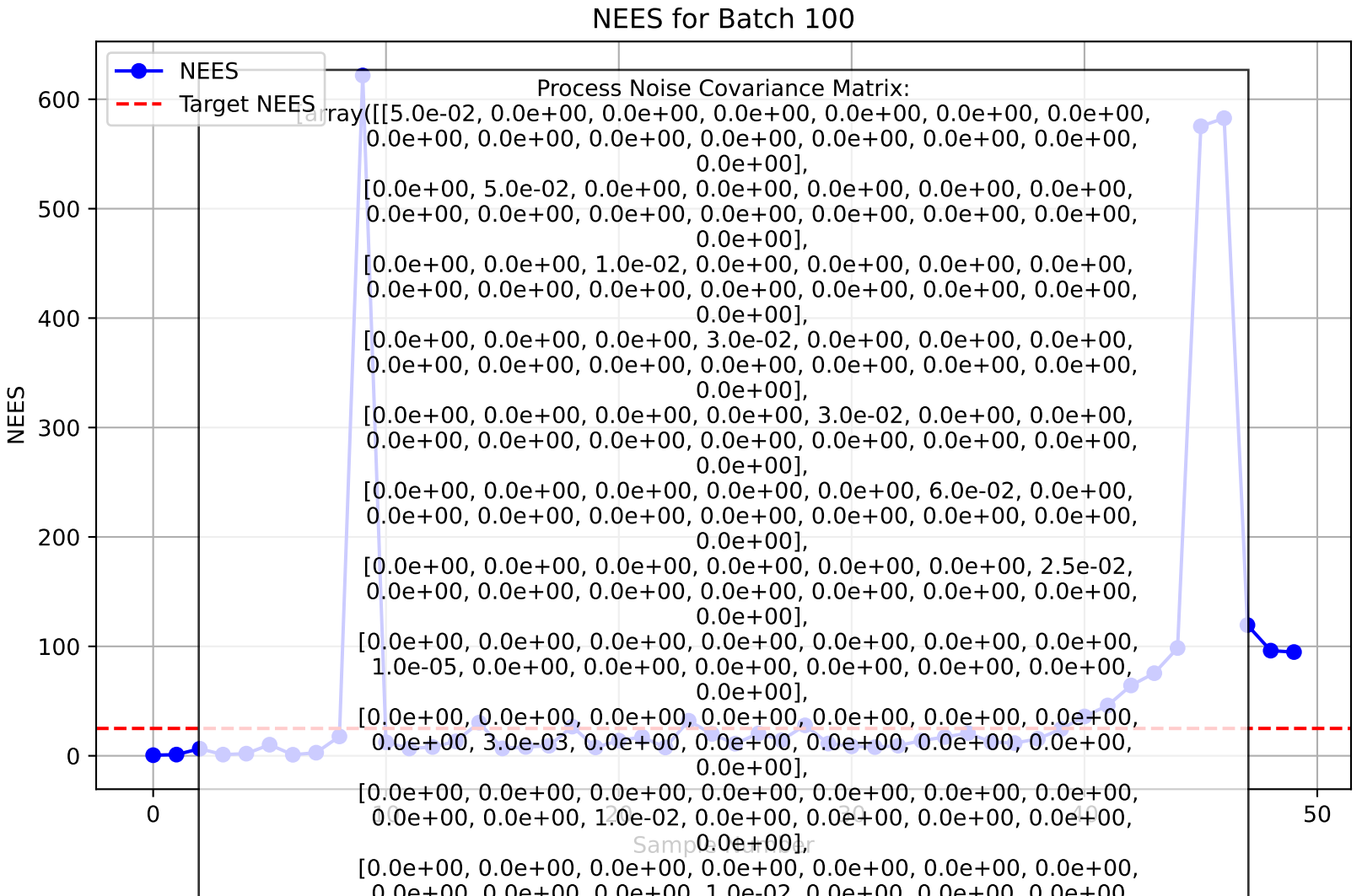

NEES for Batch 95
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.015, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600

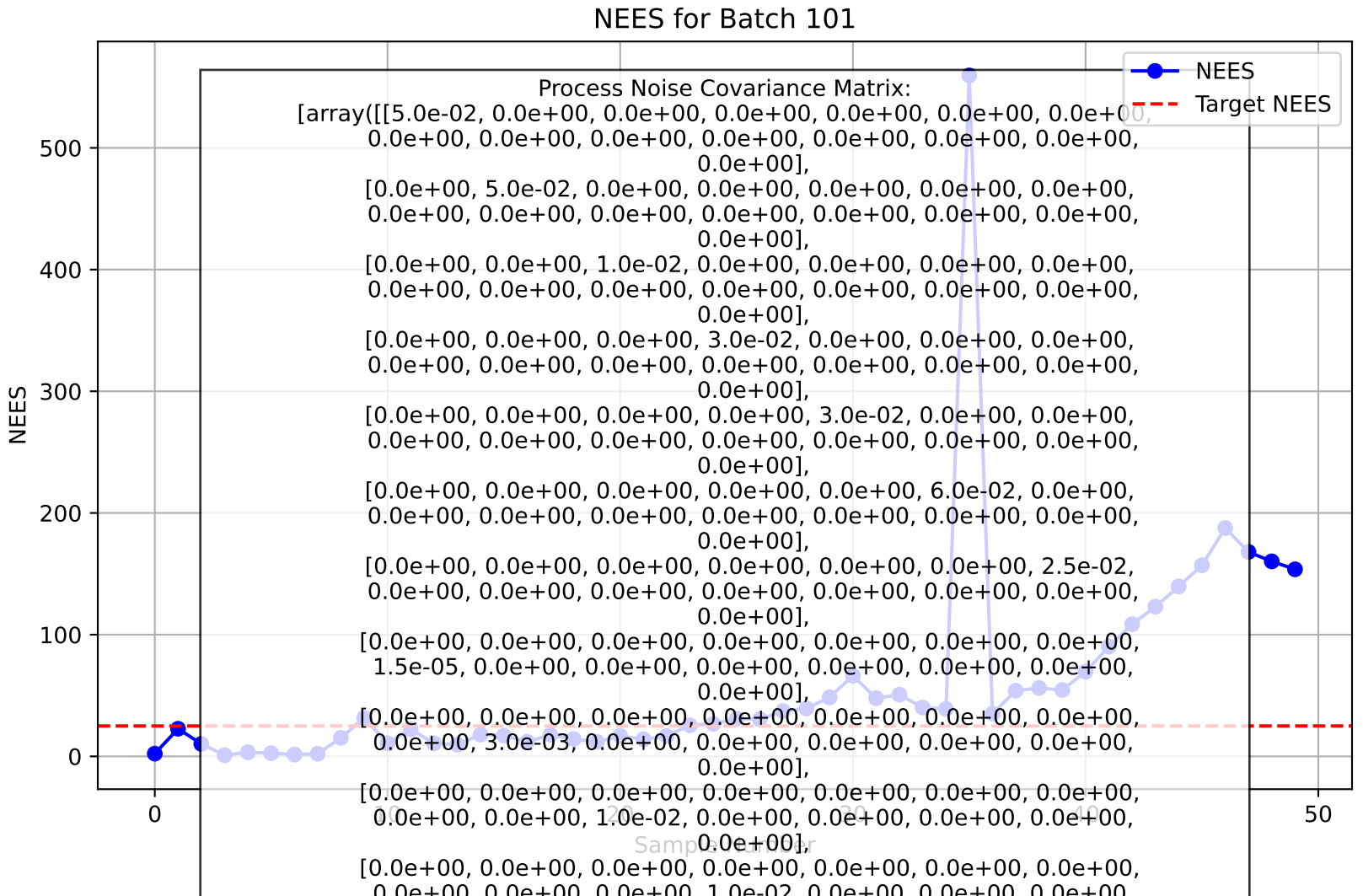

NEES for Batch 96
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.001, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.003,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
500
0
10
20
30
40
50

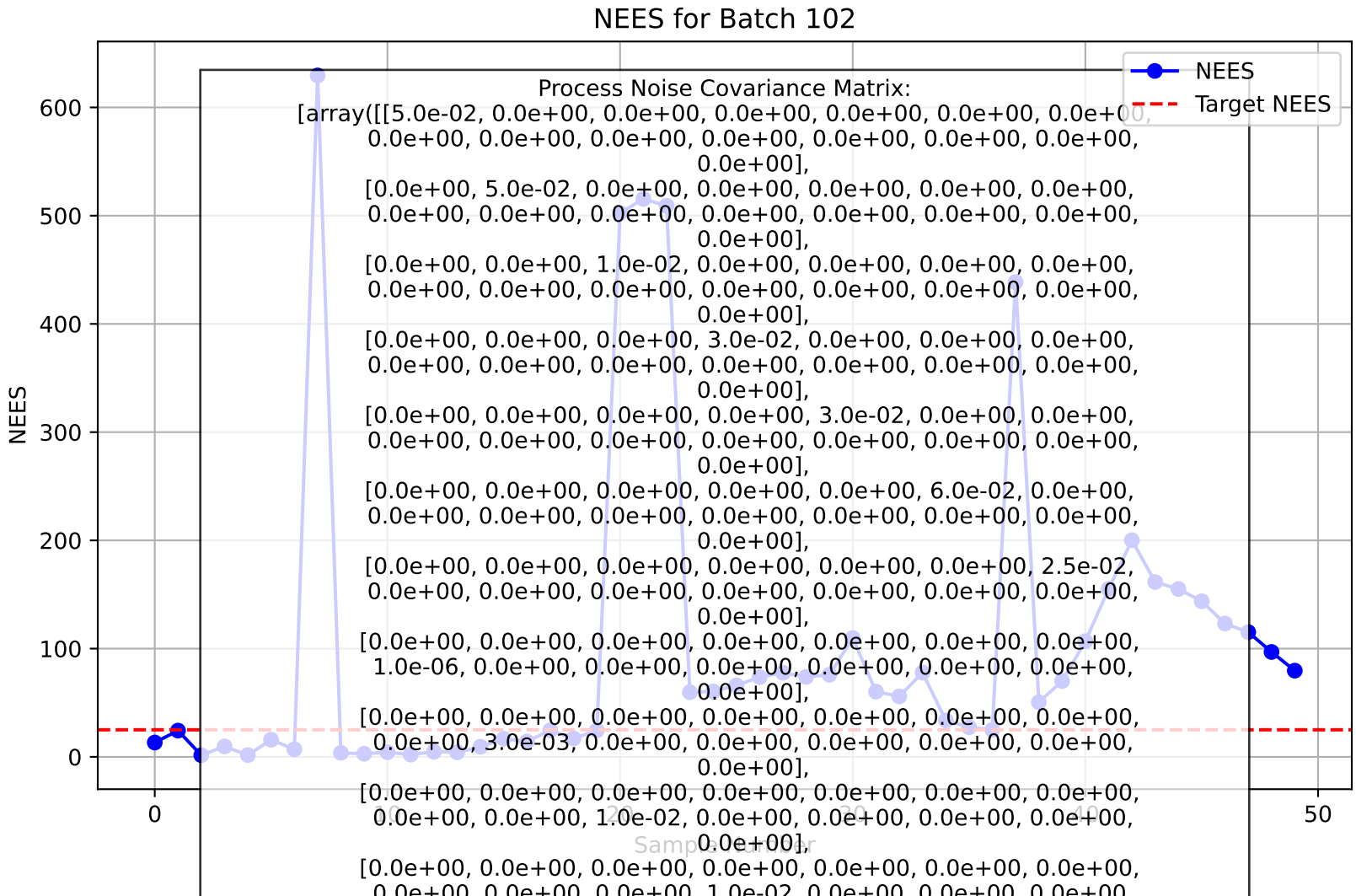

NEES for Batch 97
NEES
Target NEES
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0015,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,

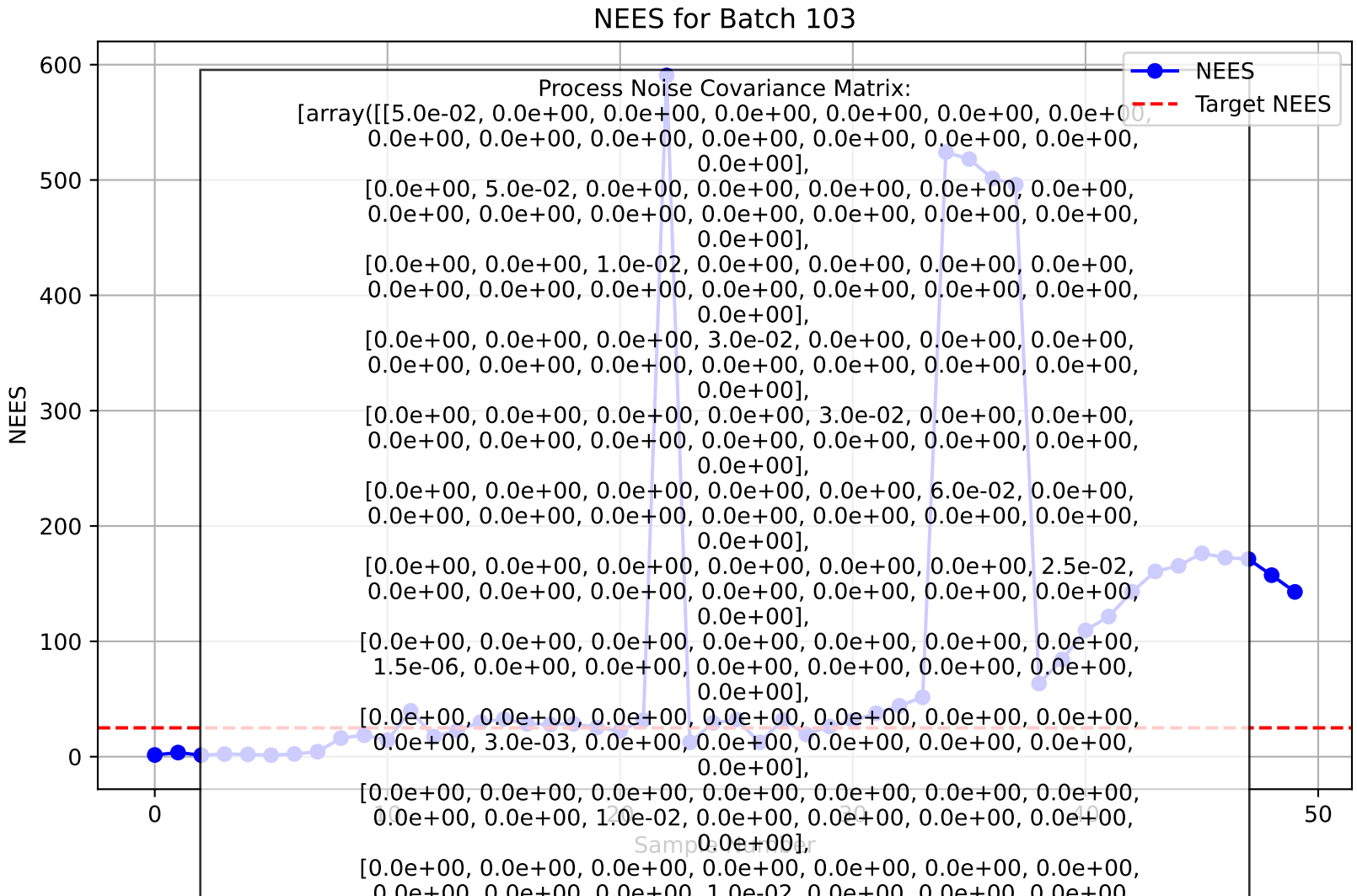

NEES for Batch 98
NEES
Target NEES
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0001,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.003 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.

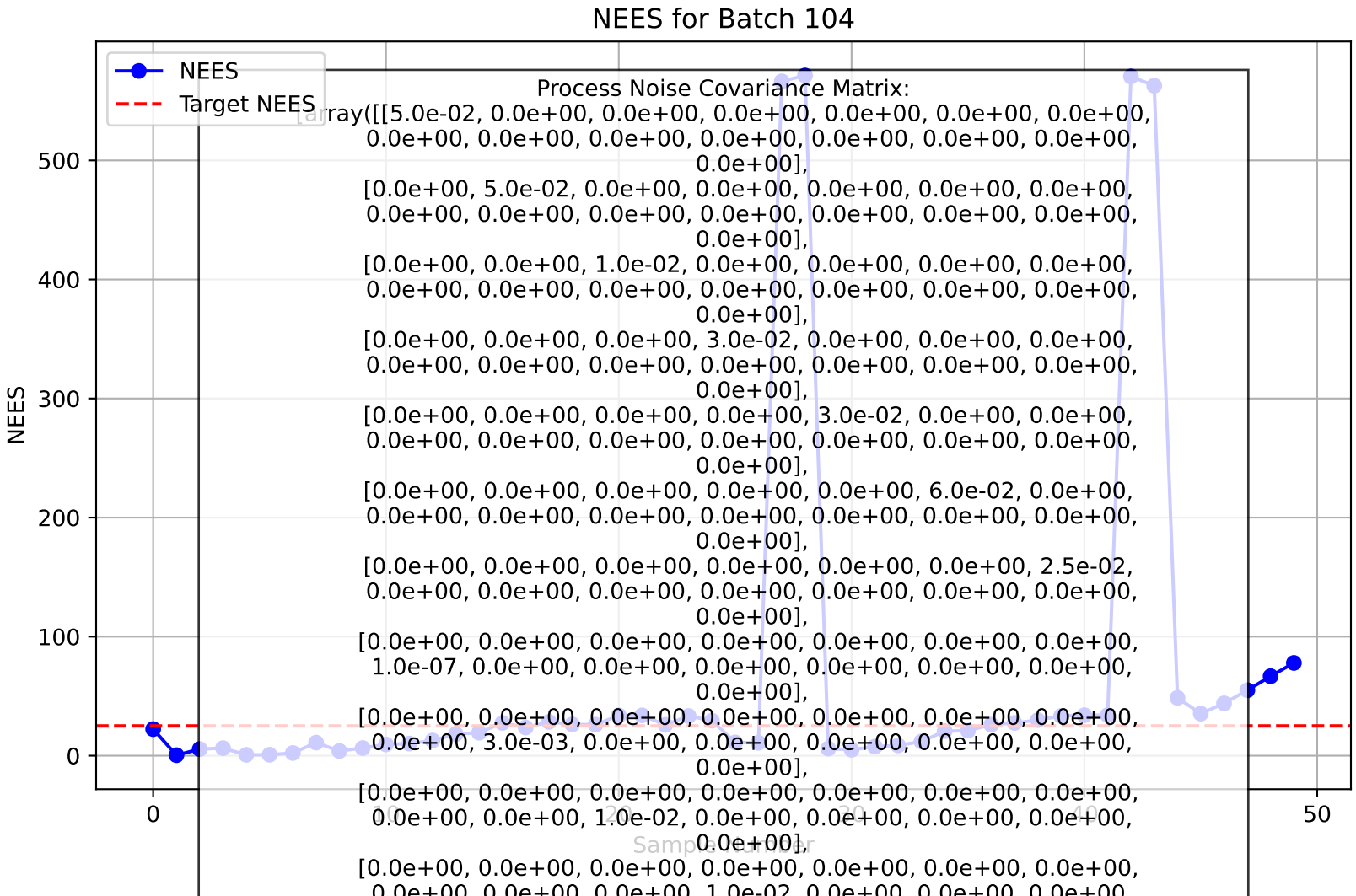

NEES for Batch 99
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.00015, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.003 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,

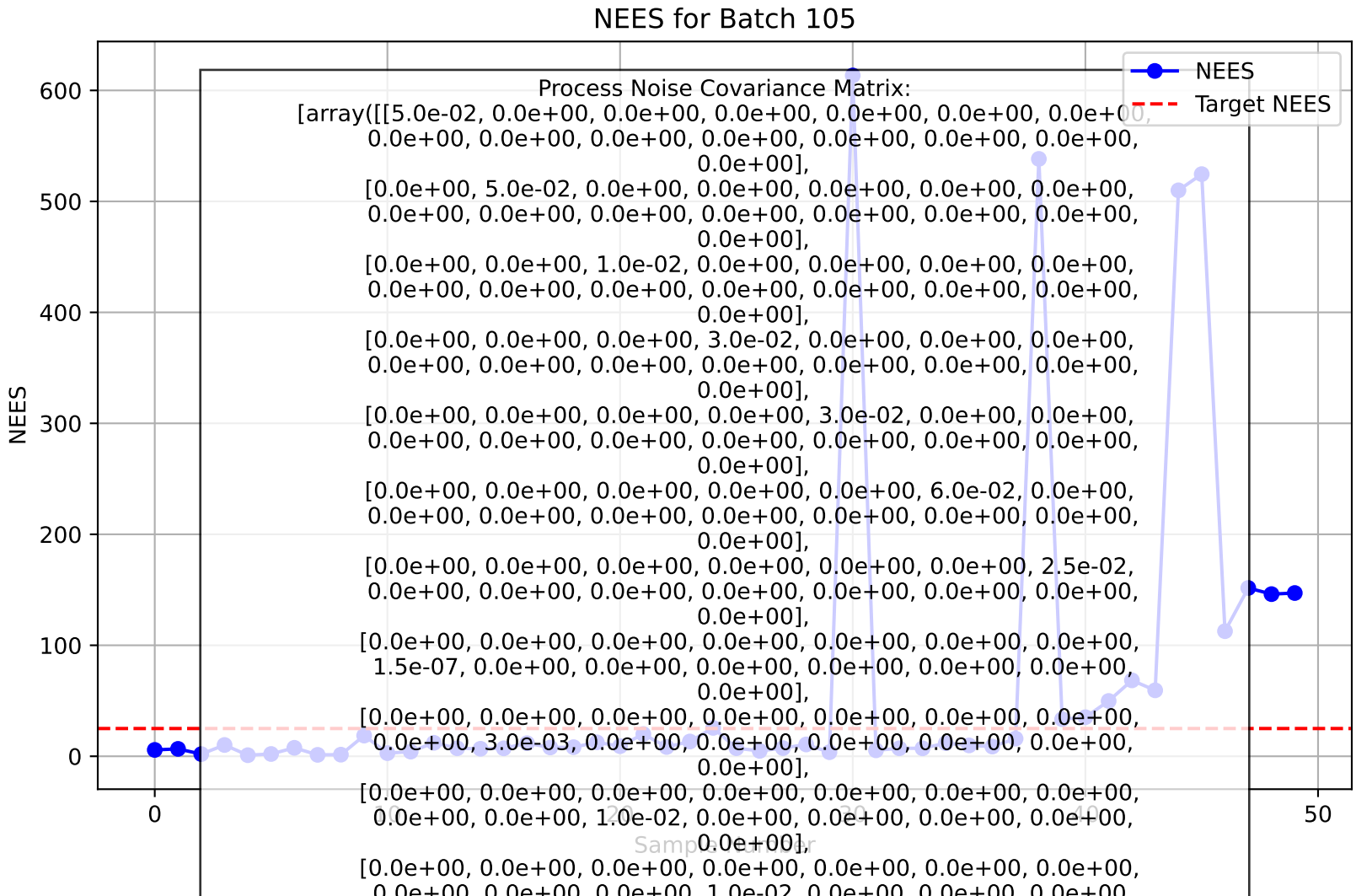

NEES for Batch 100
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
1.0e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50

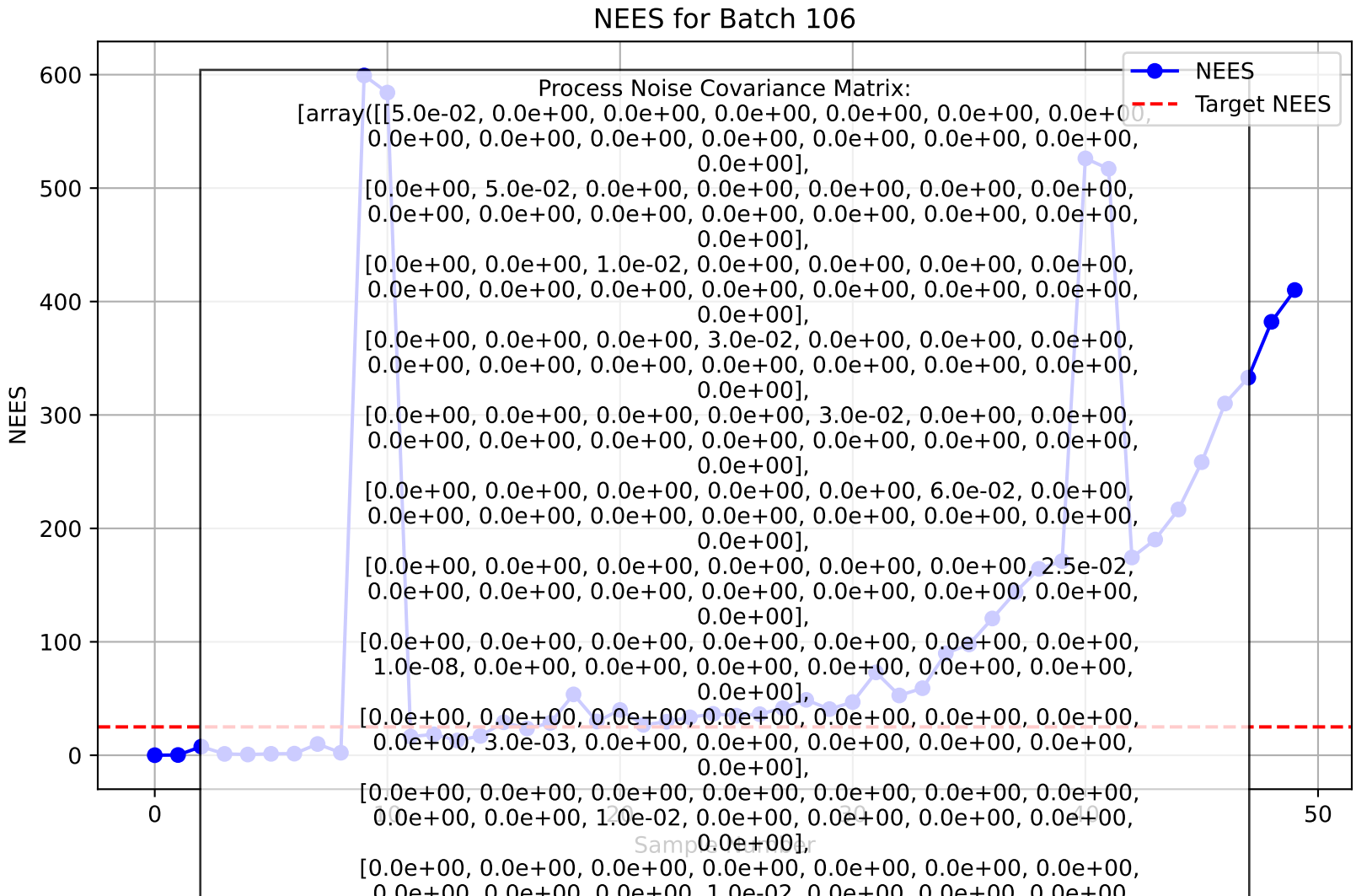

NEES for Batch 101
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
1.5e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50

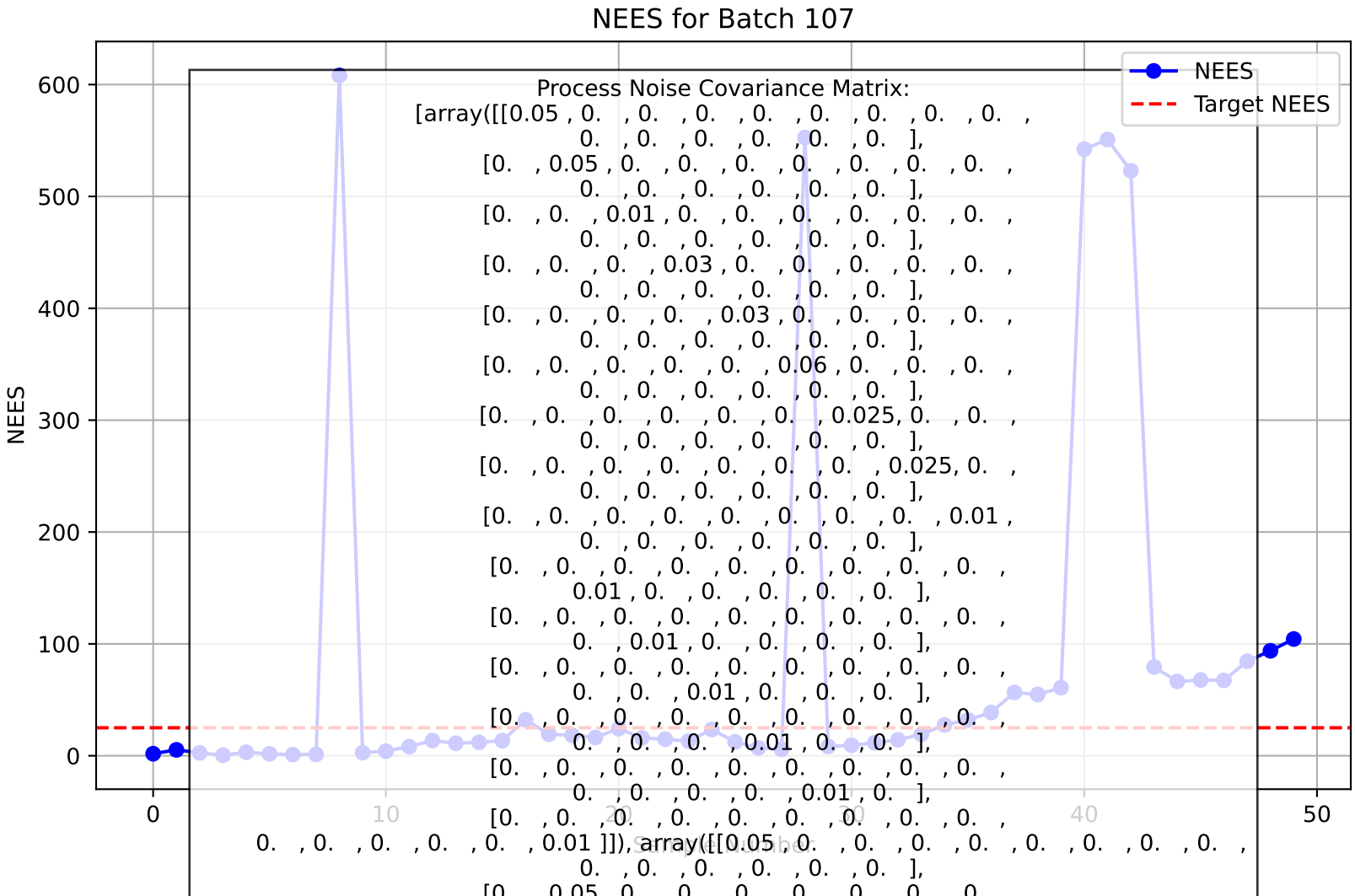

NEES for Batch 102
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
1.0e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600
500
400
300
200
100
0
0
50
Sample Number

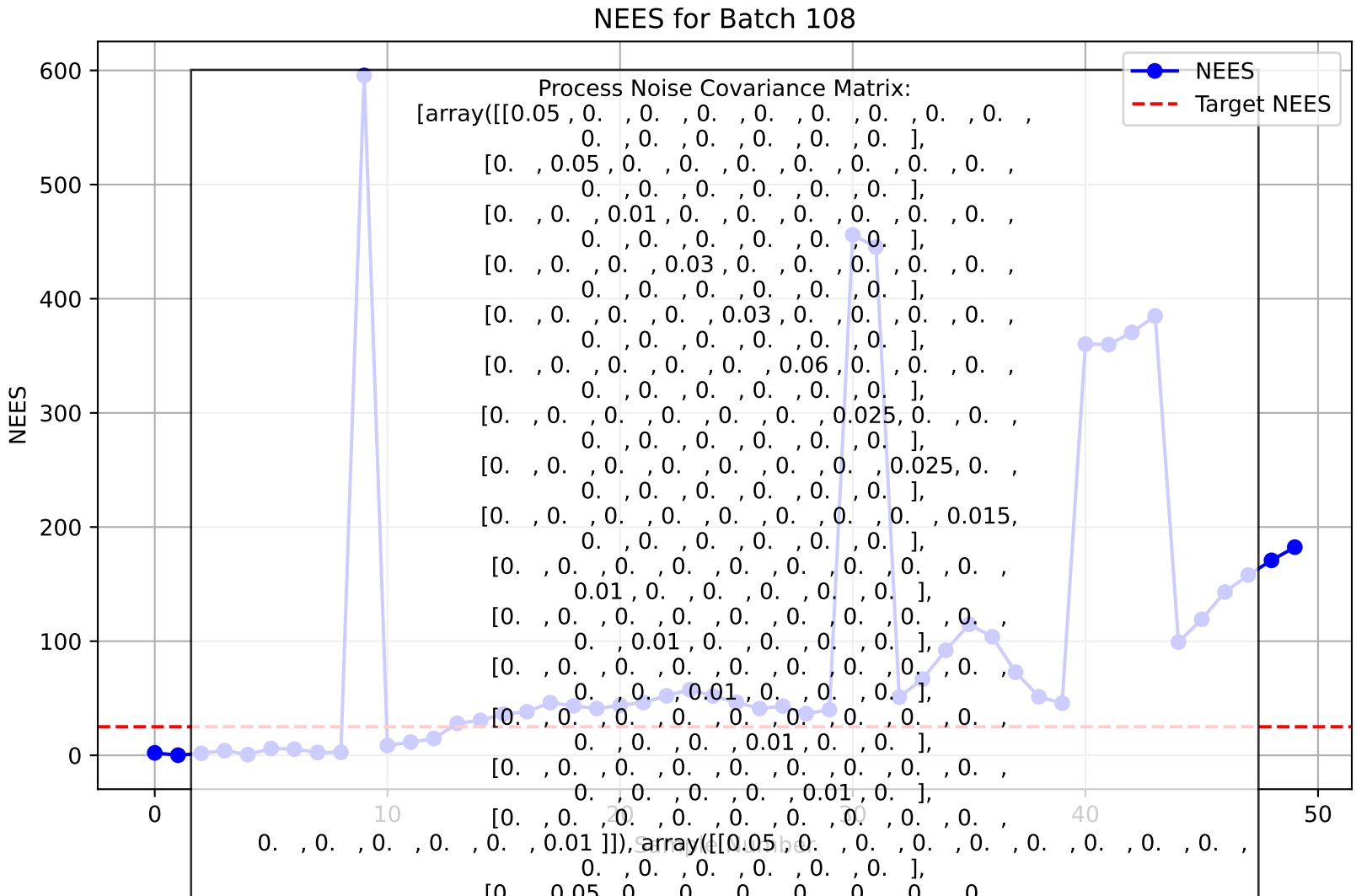

NEES for Batch 103
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
1.5e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

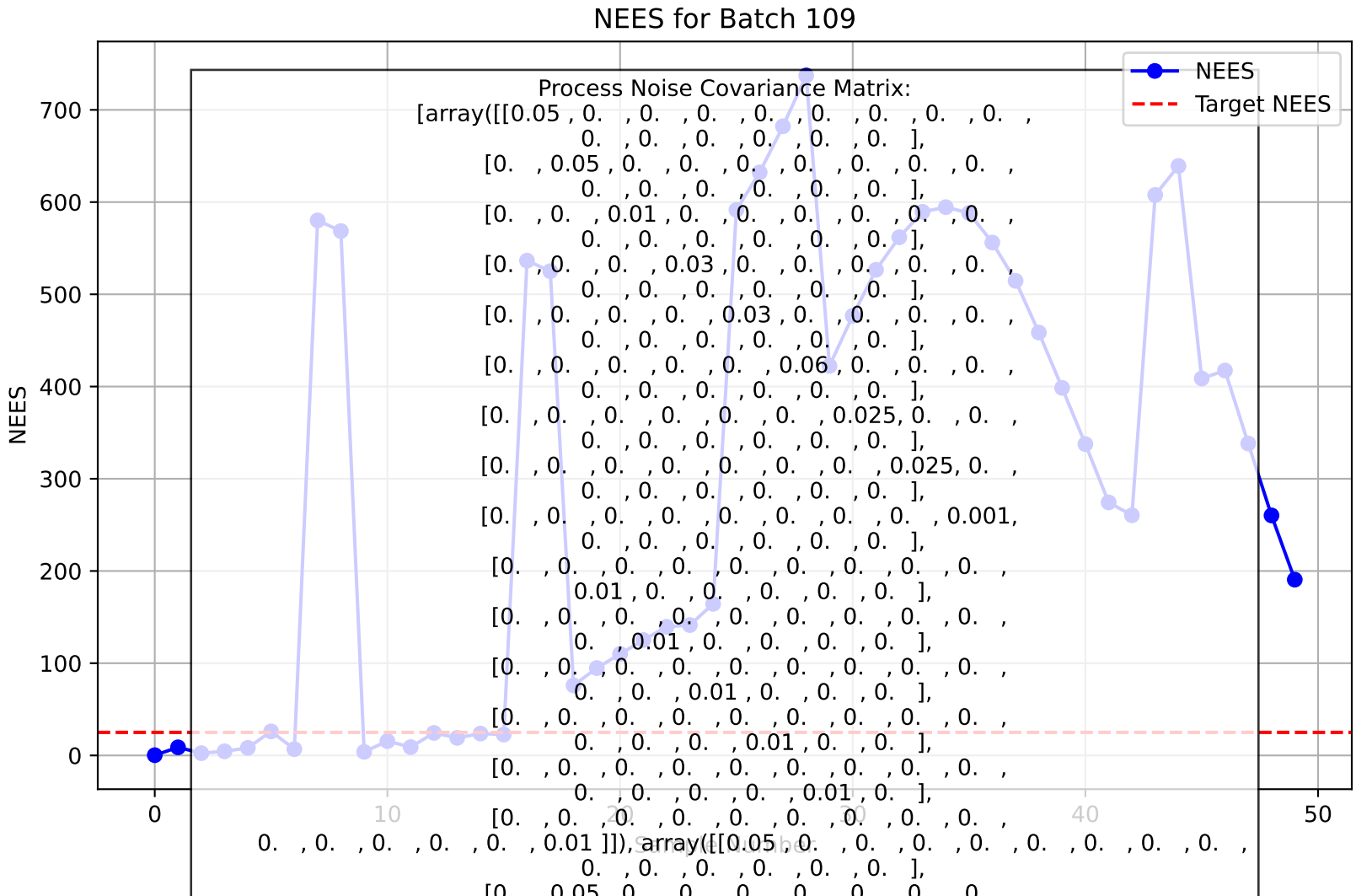

NEES for Batch 104
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
1.0e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50

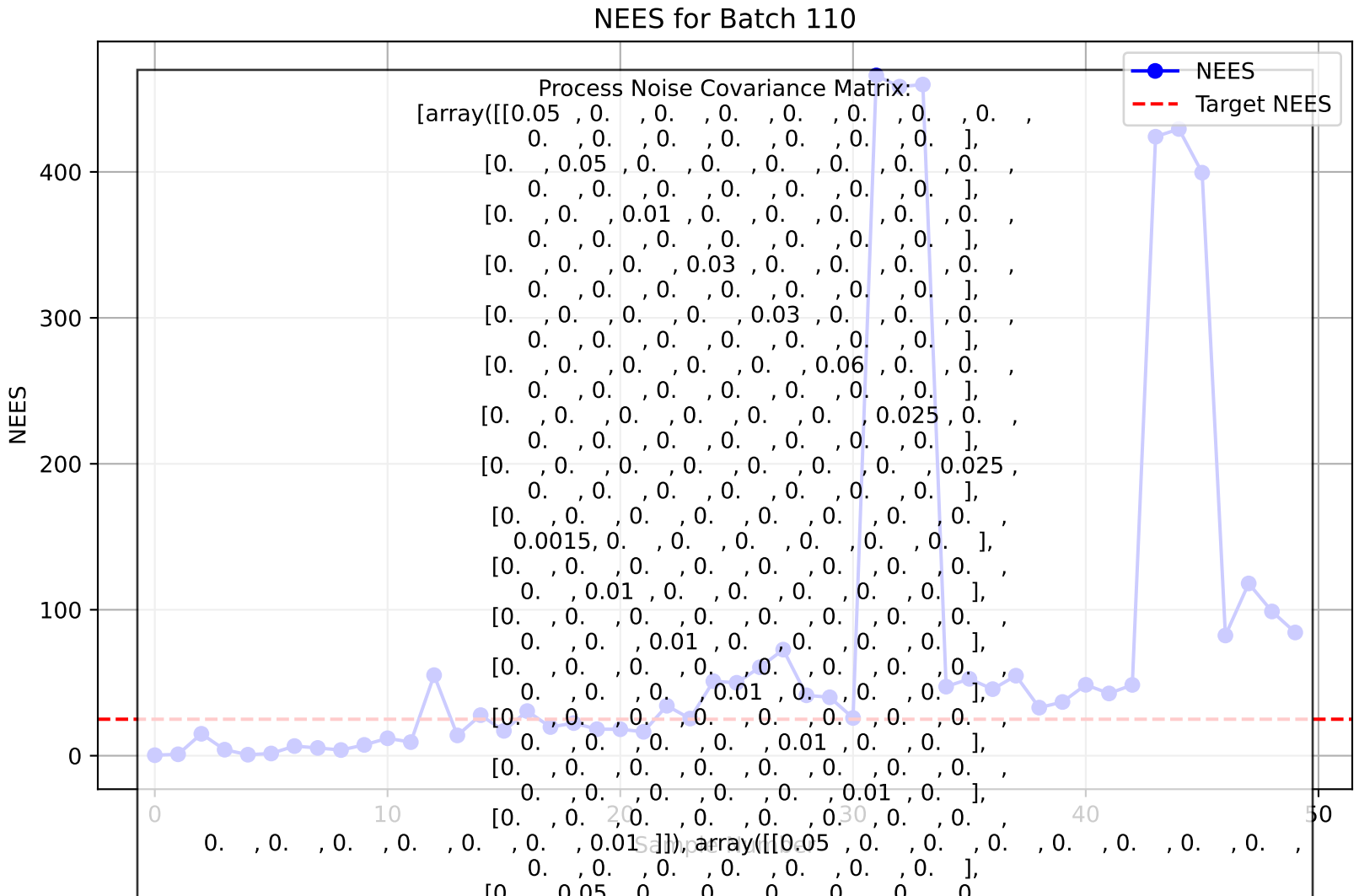

NEES for Batch 105
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
1.5e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

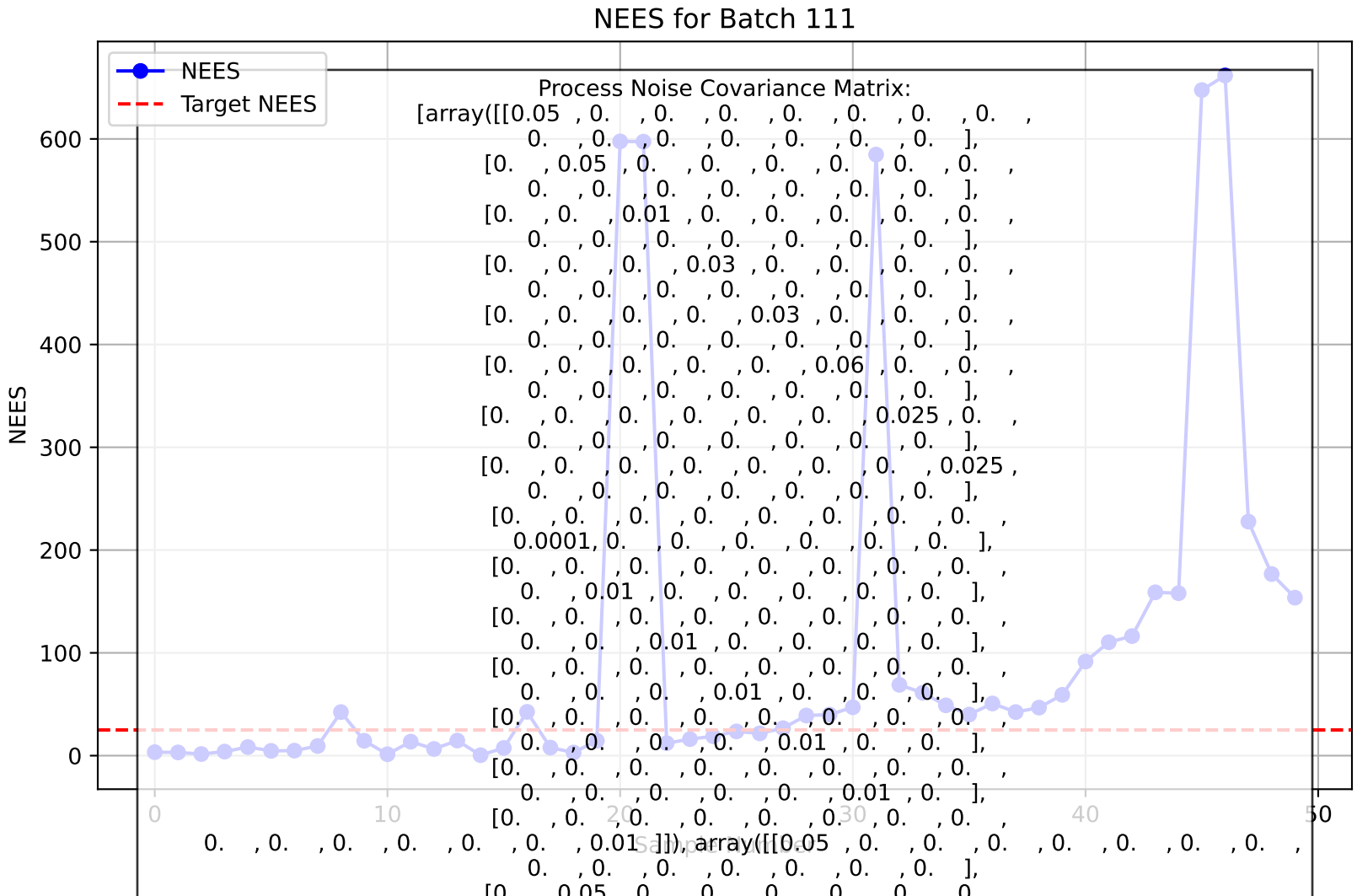

NEES for Batch 106
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
1.0e-08, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

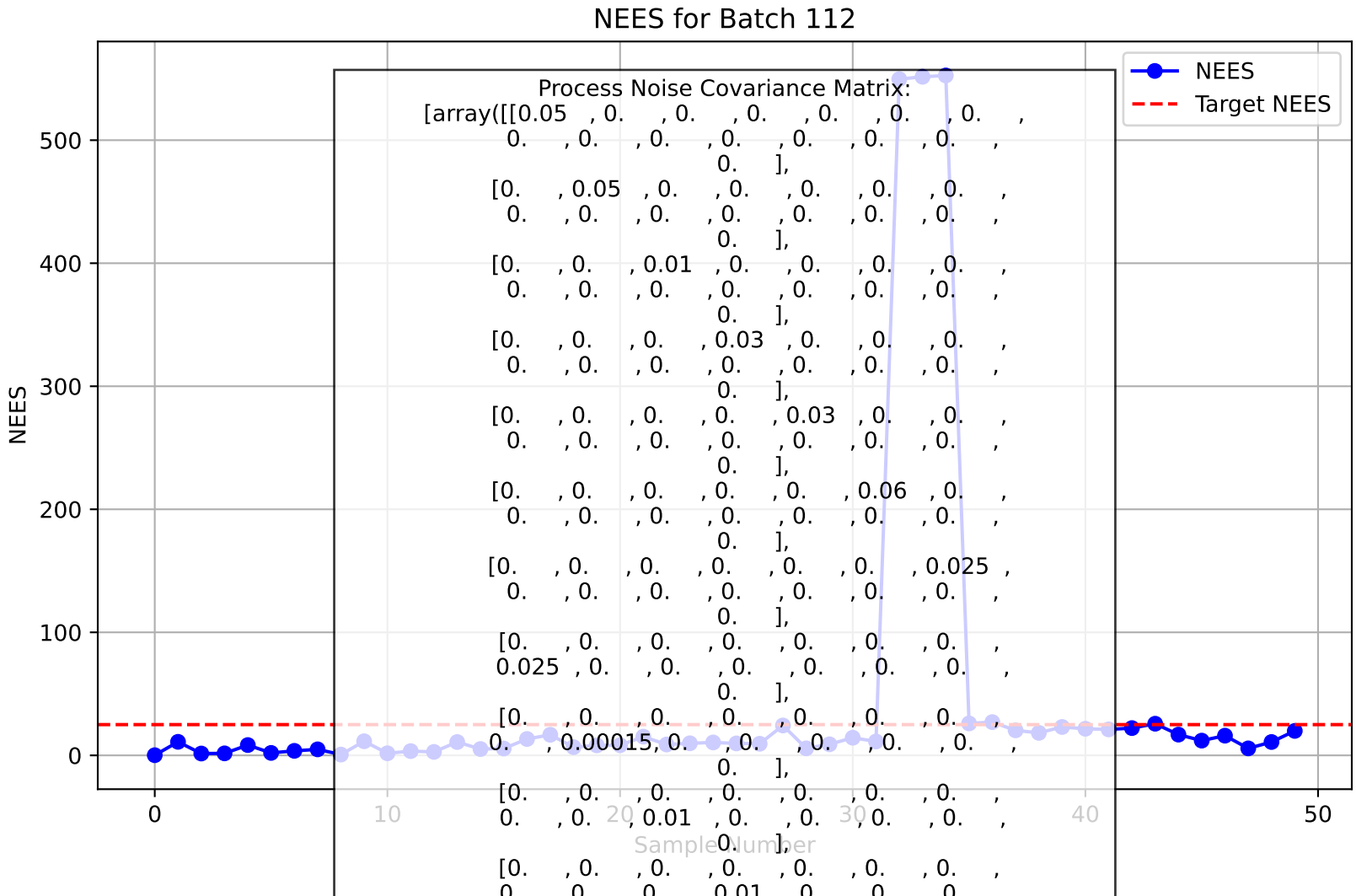

NEES for Batch 107
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600

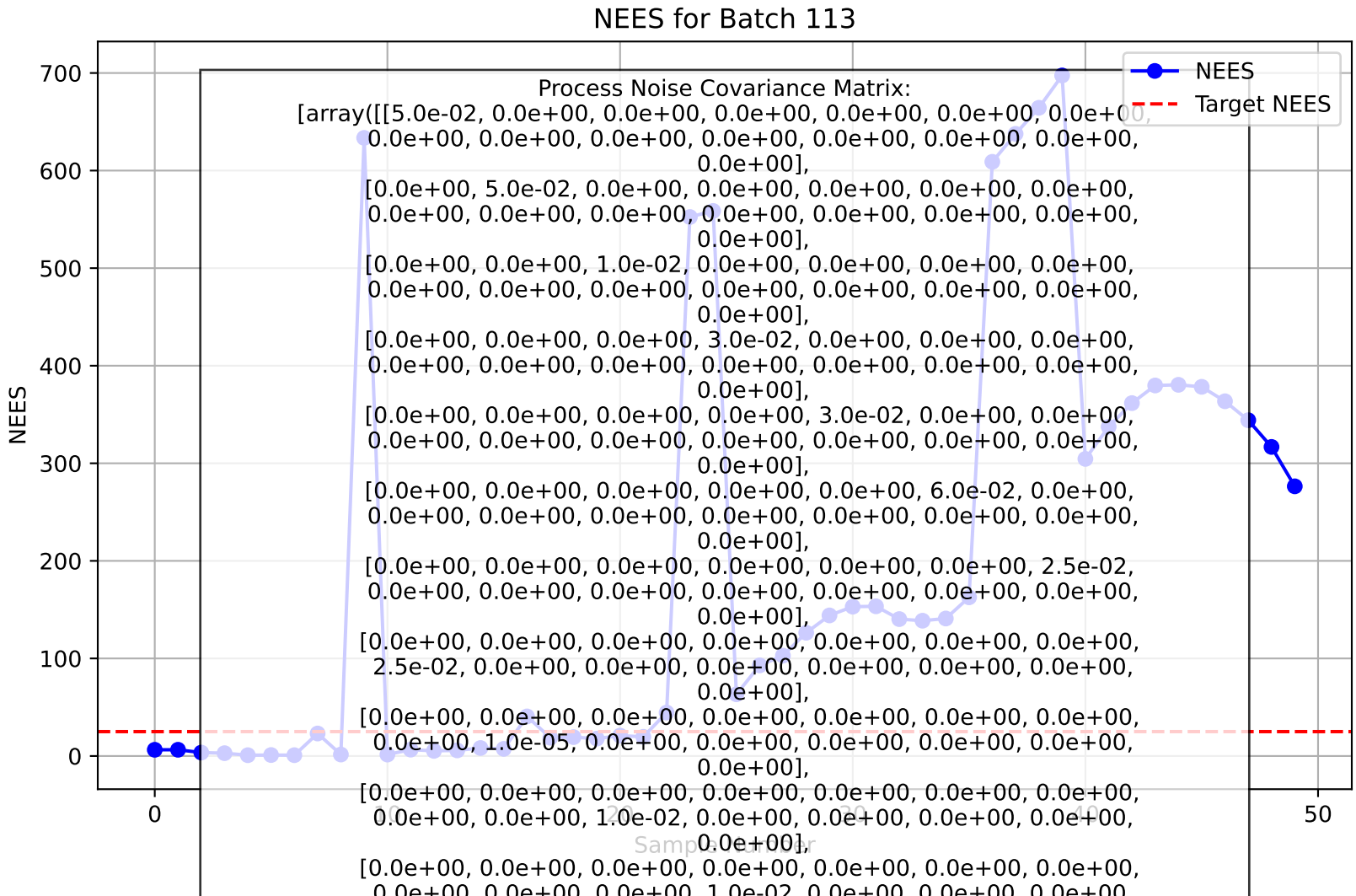

NEES for Batch 108
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.015,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600

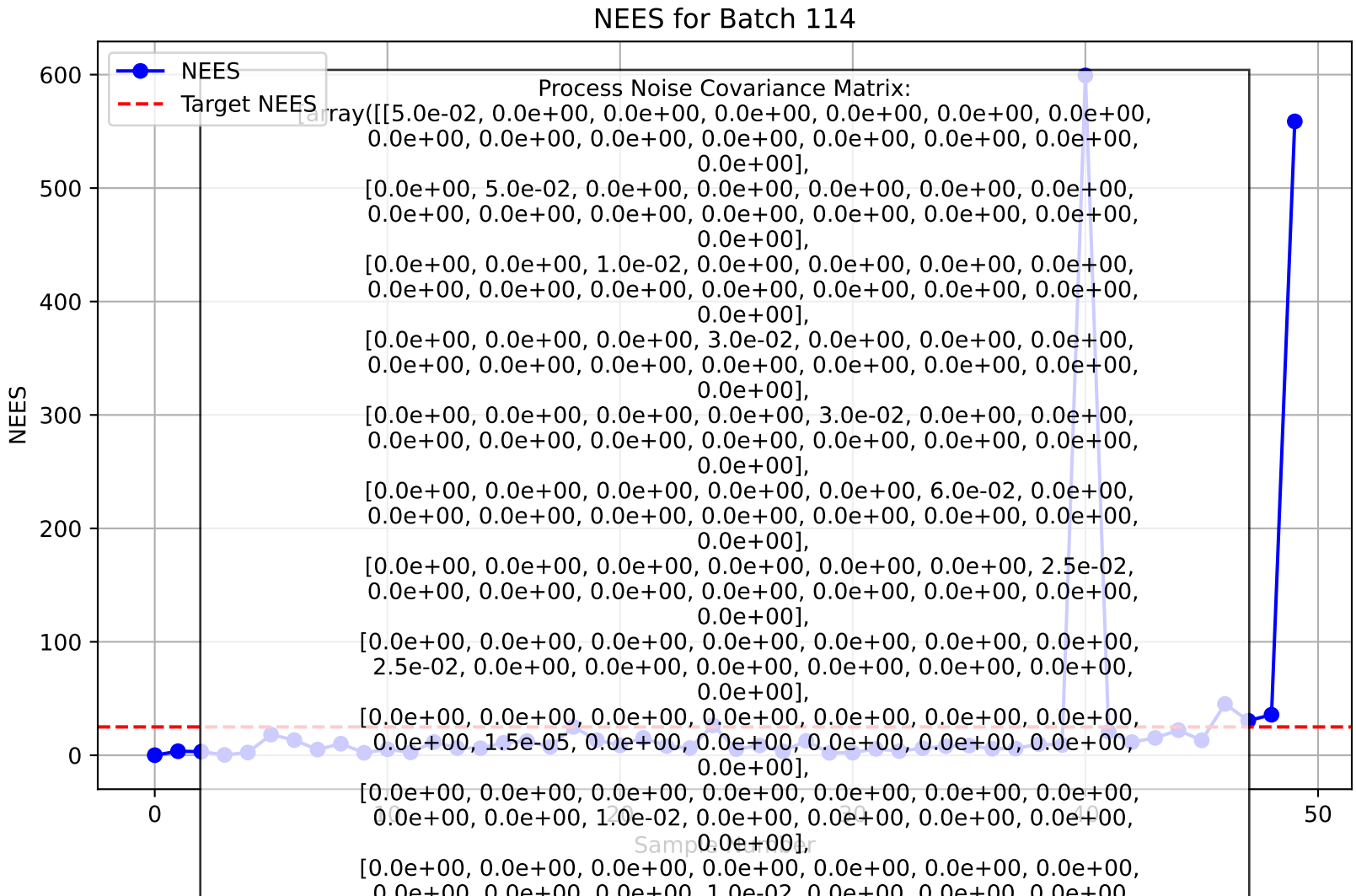

NEES for Batch 109
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.001,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
500
600
700
0
10
20
30
40
50

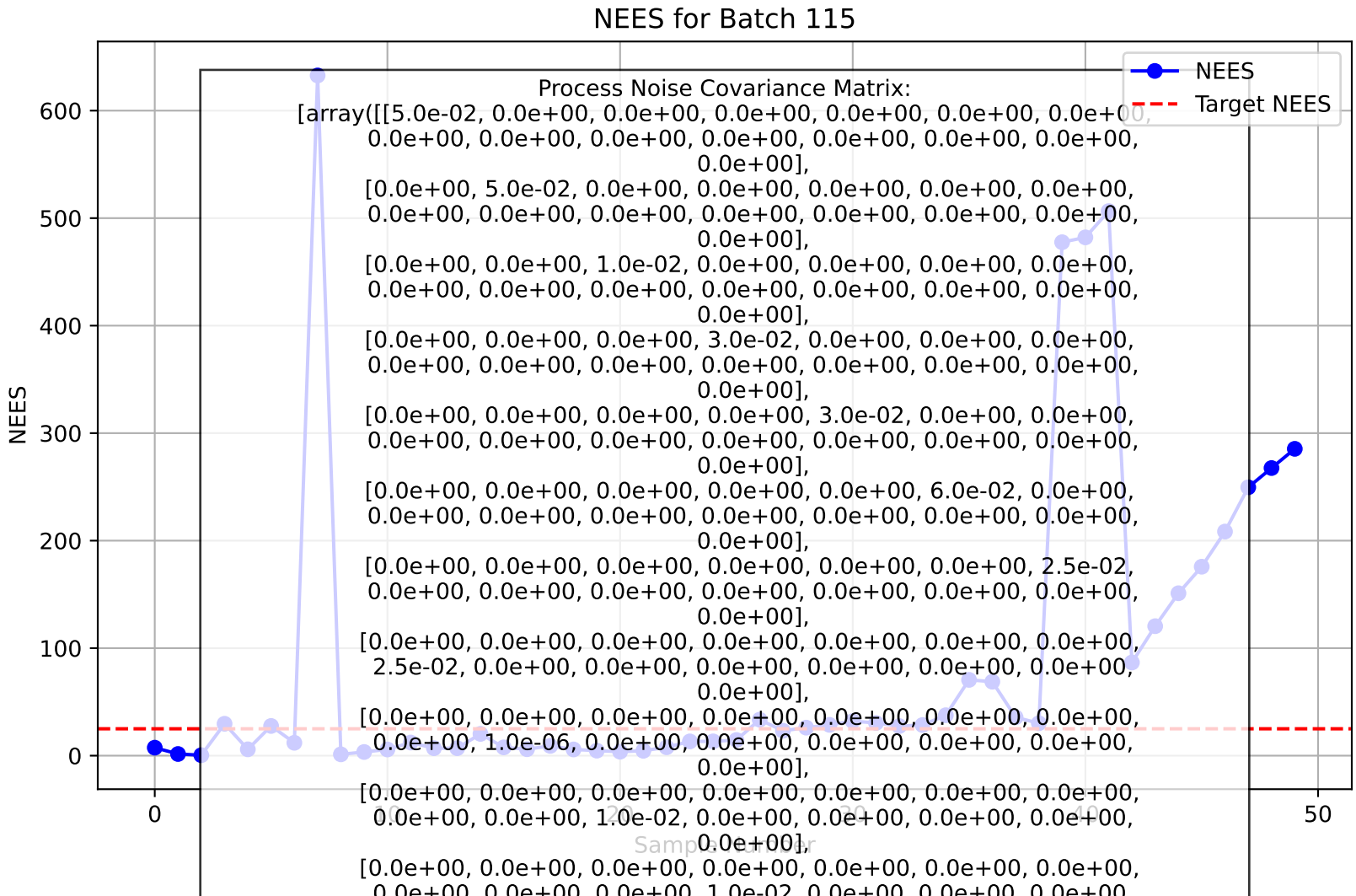

NEES for Batch 110
NEES
Target NEES
NEES
Sample Index
0
100
200
300
400
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.0015, 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.

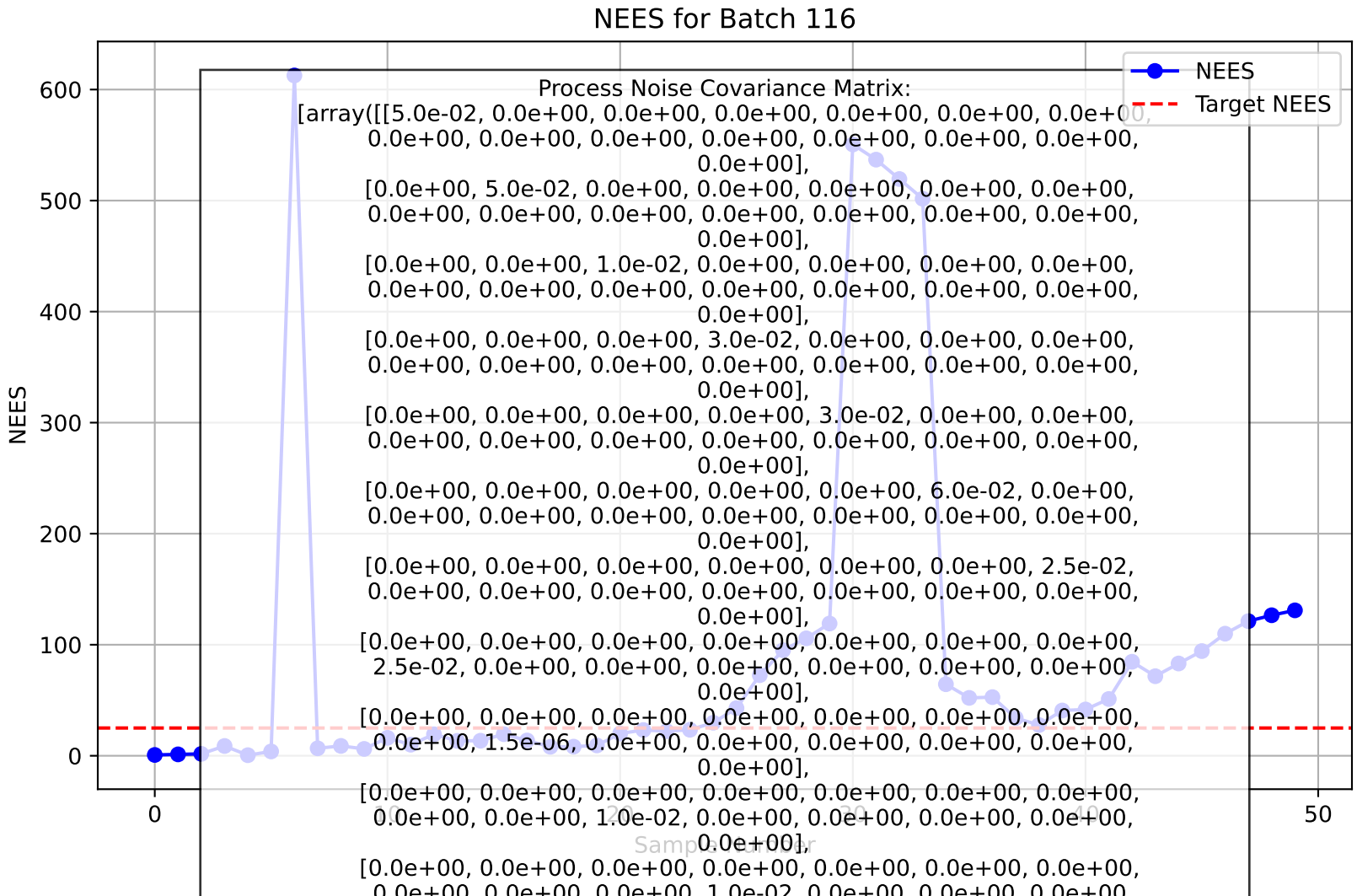

NEES for Batch 111
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.0001, 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50

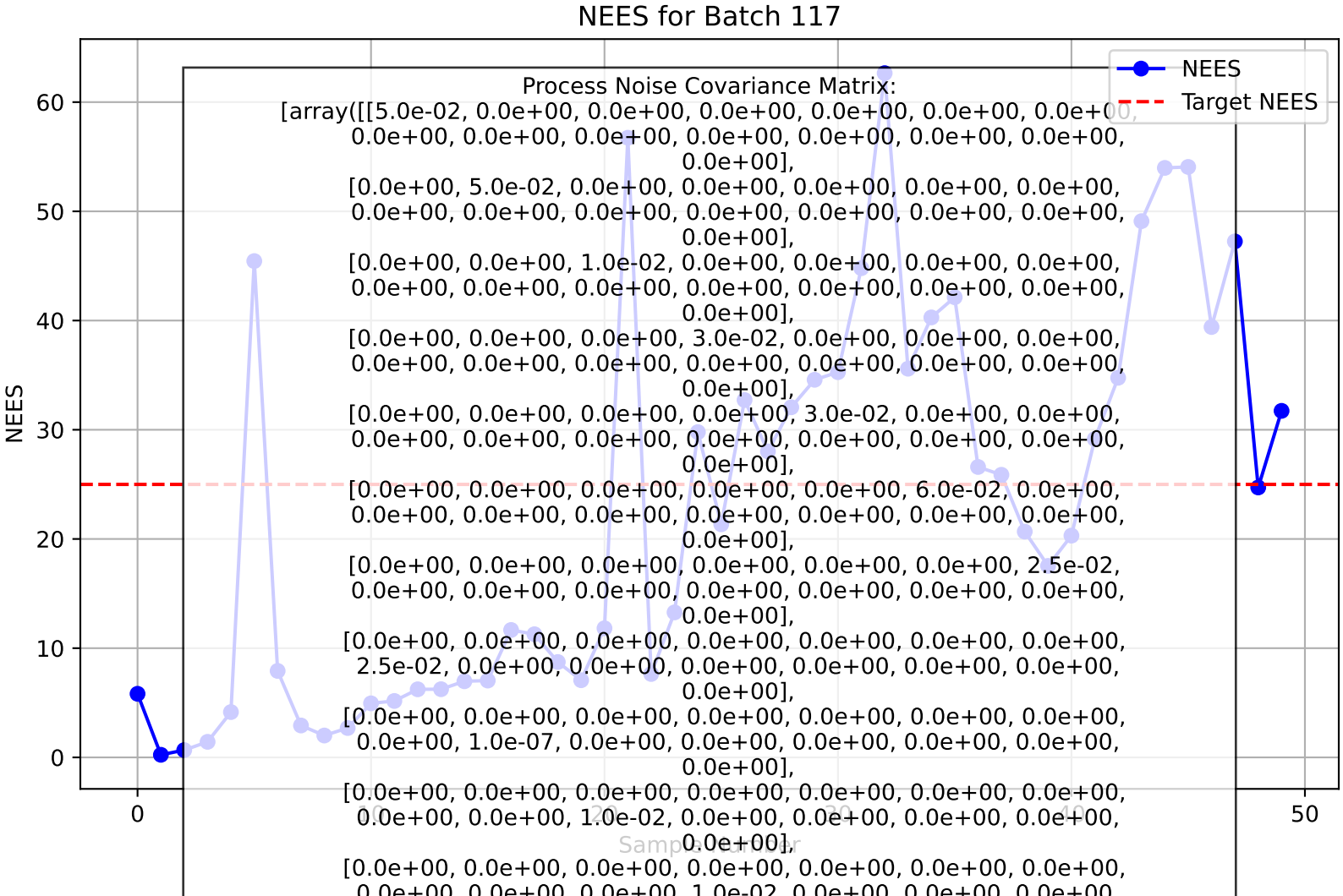

NEES for Batch 112
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.00015, 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.

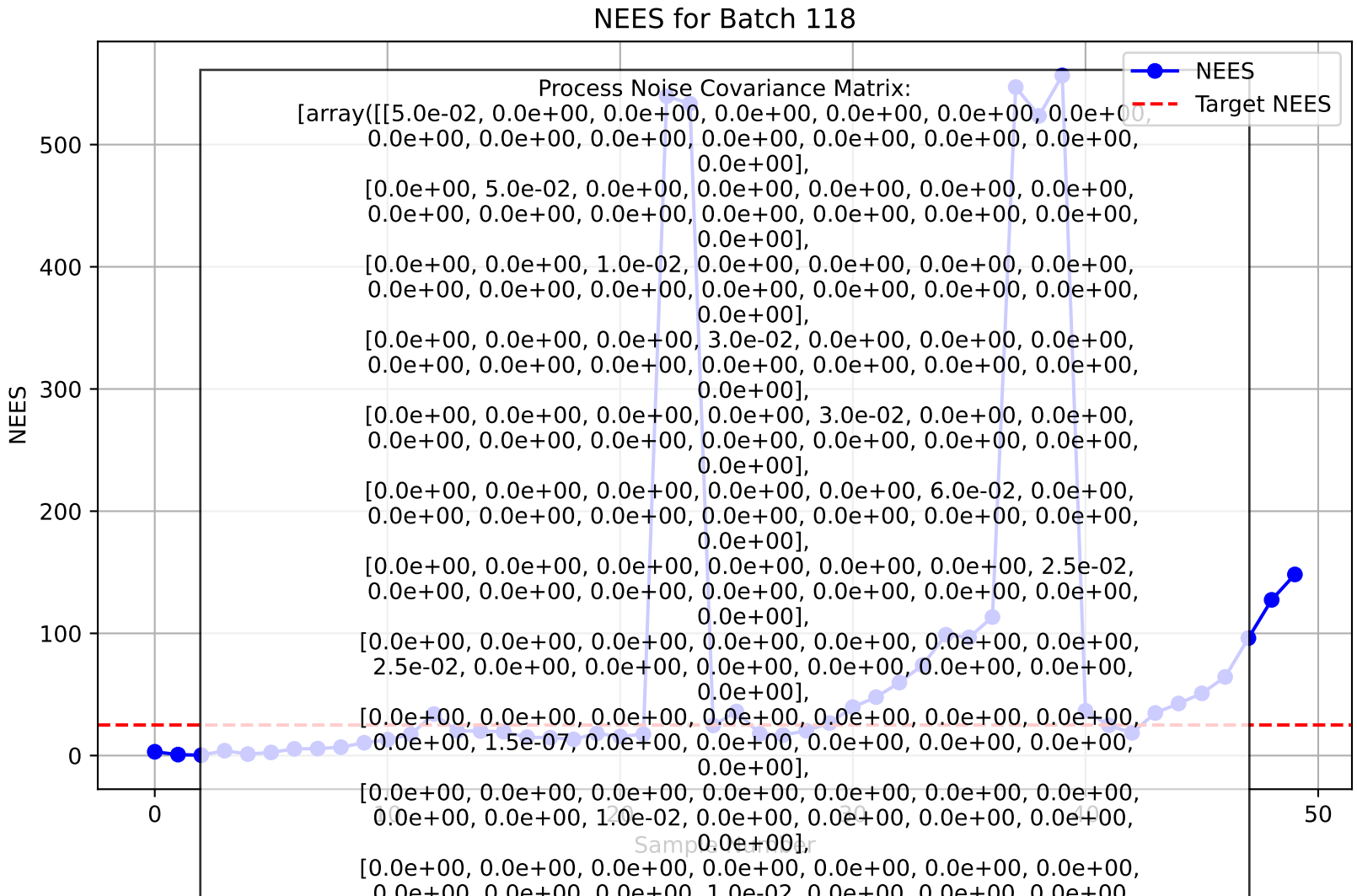

NEES for Batch 113
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50
100
200
300
400
500
600
700

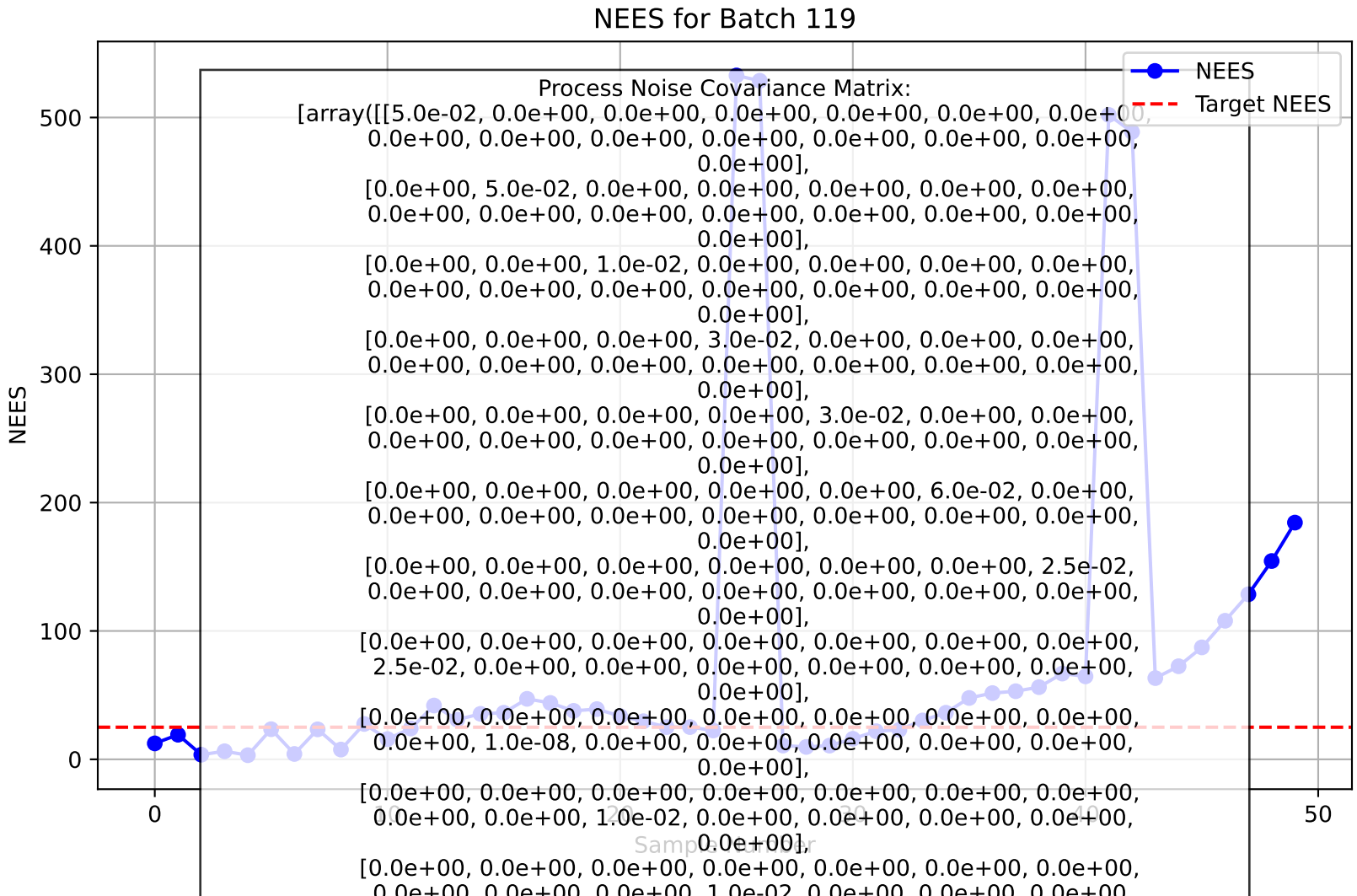

NEES for Batch 114
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.5e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
600
500
400
300
200
100
0
0
50

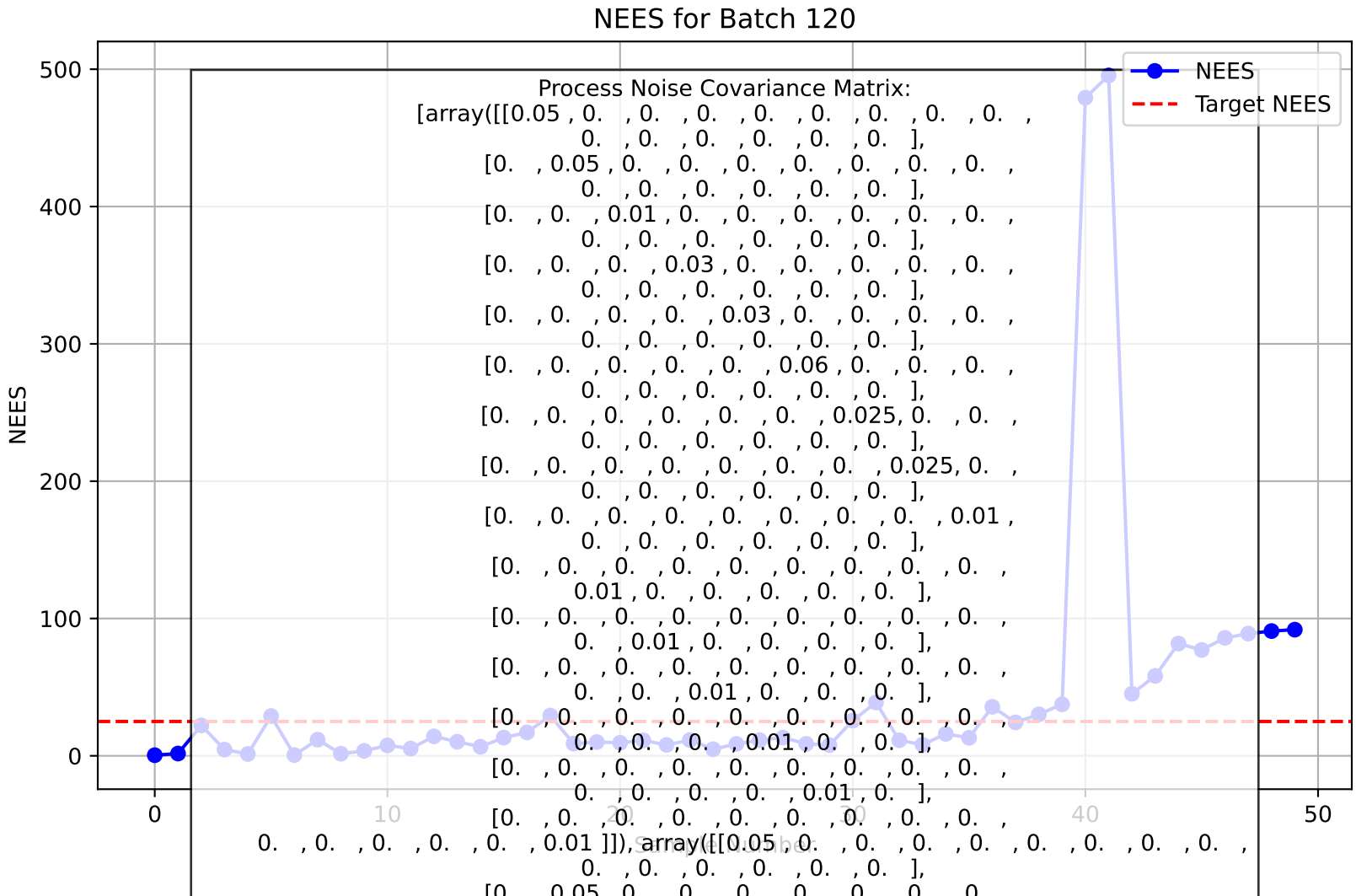

NEES for Batch 115
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

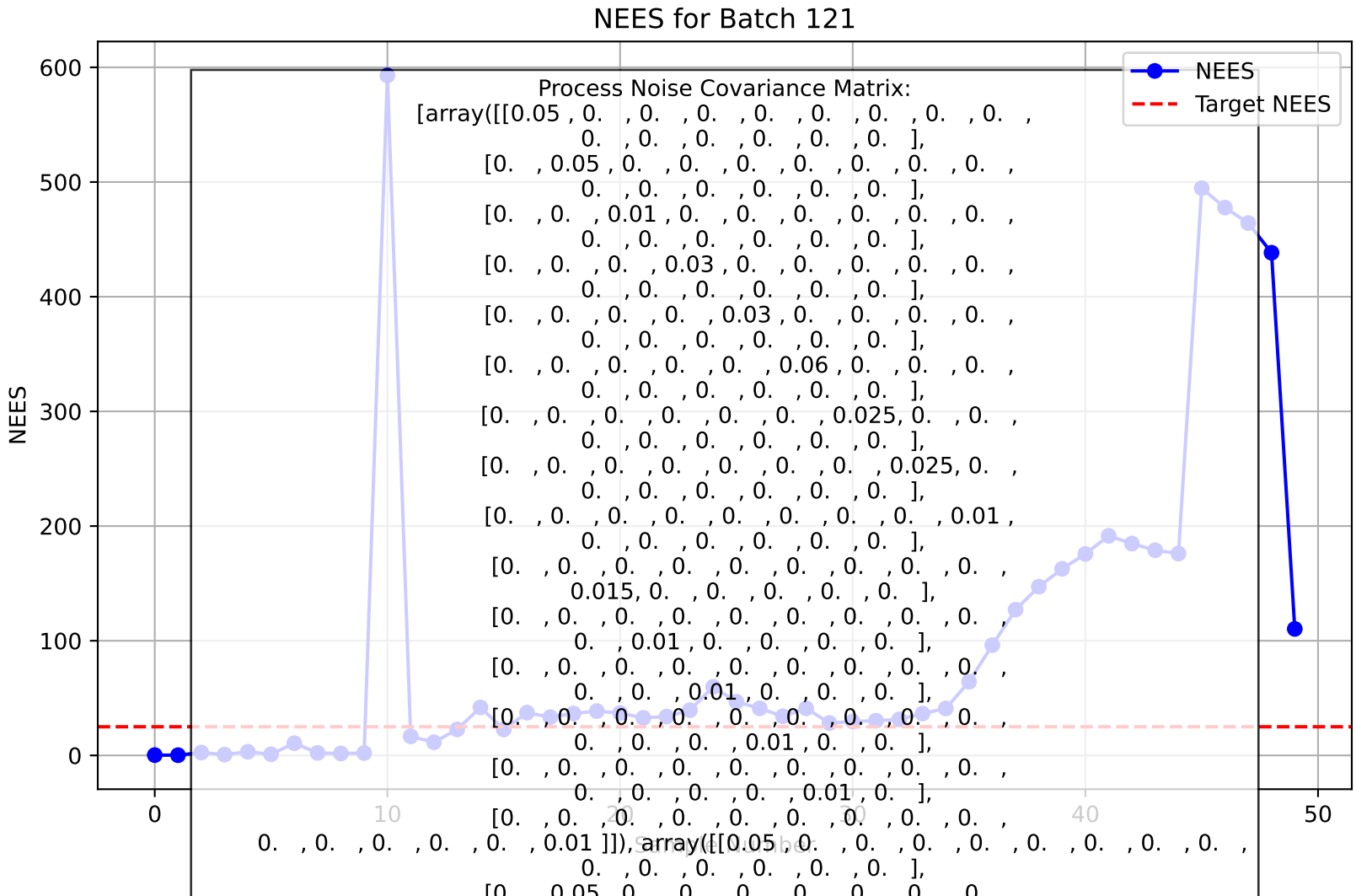

NEES for Batch 116
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.5e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
600
0
50

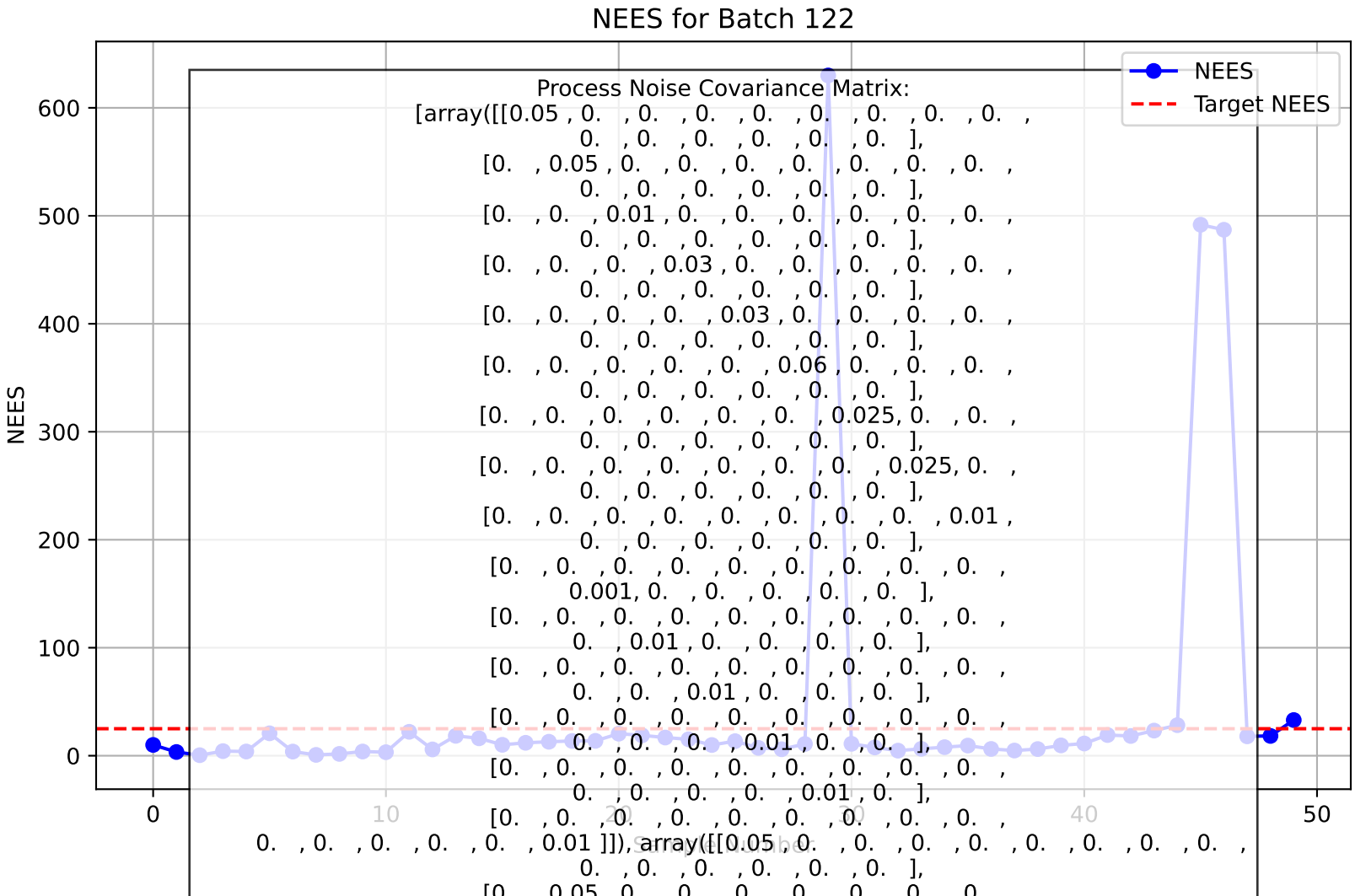

NEES for Batch 117
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
10
20
30
40
50
60

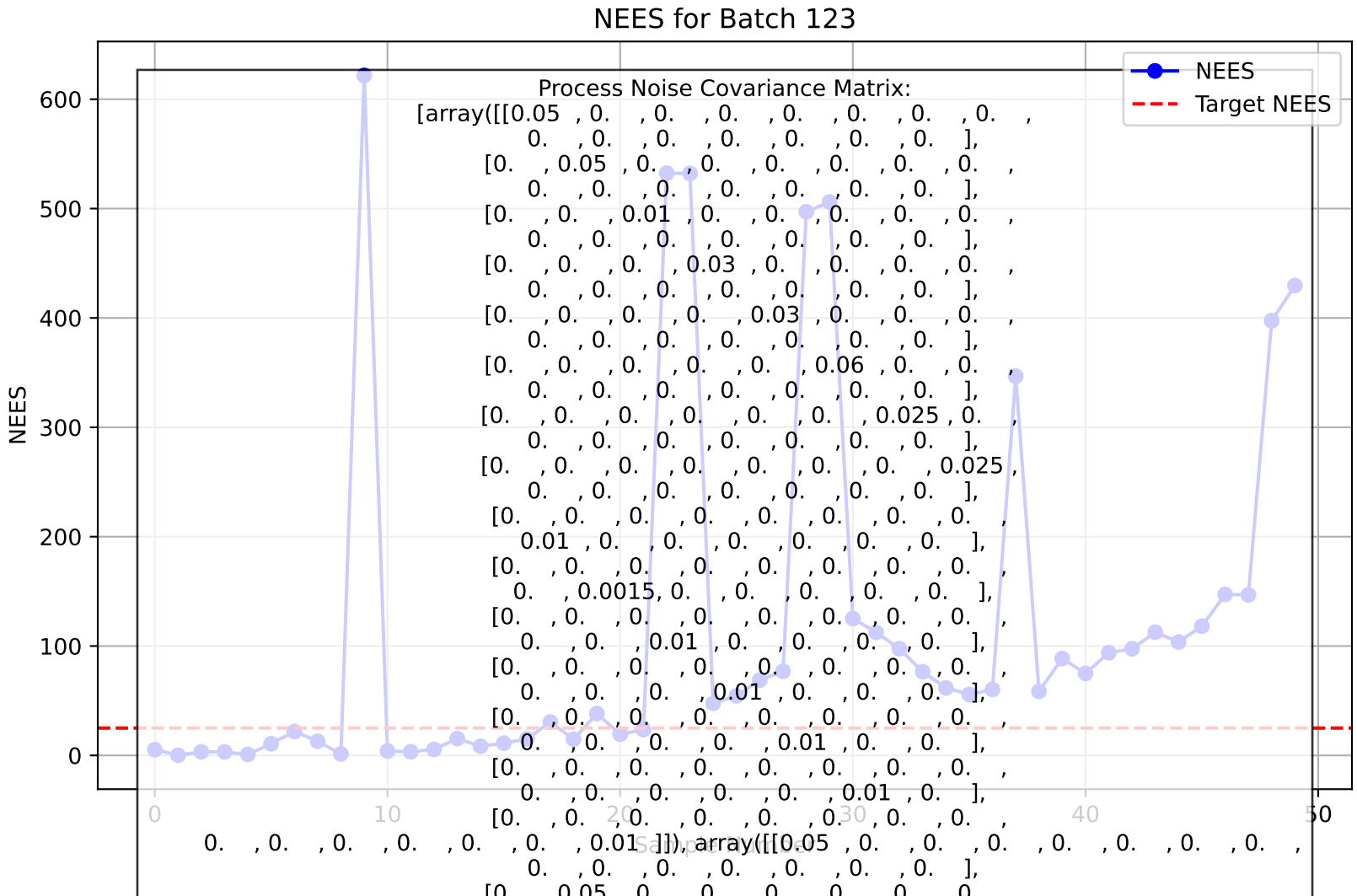

NEES for Batch 118
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
0
50
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.5e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

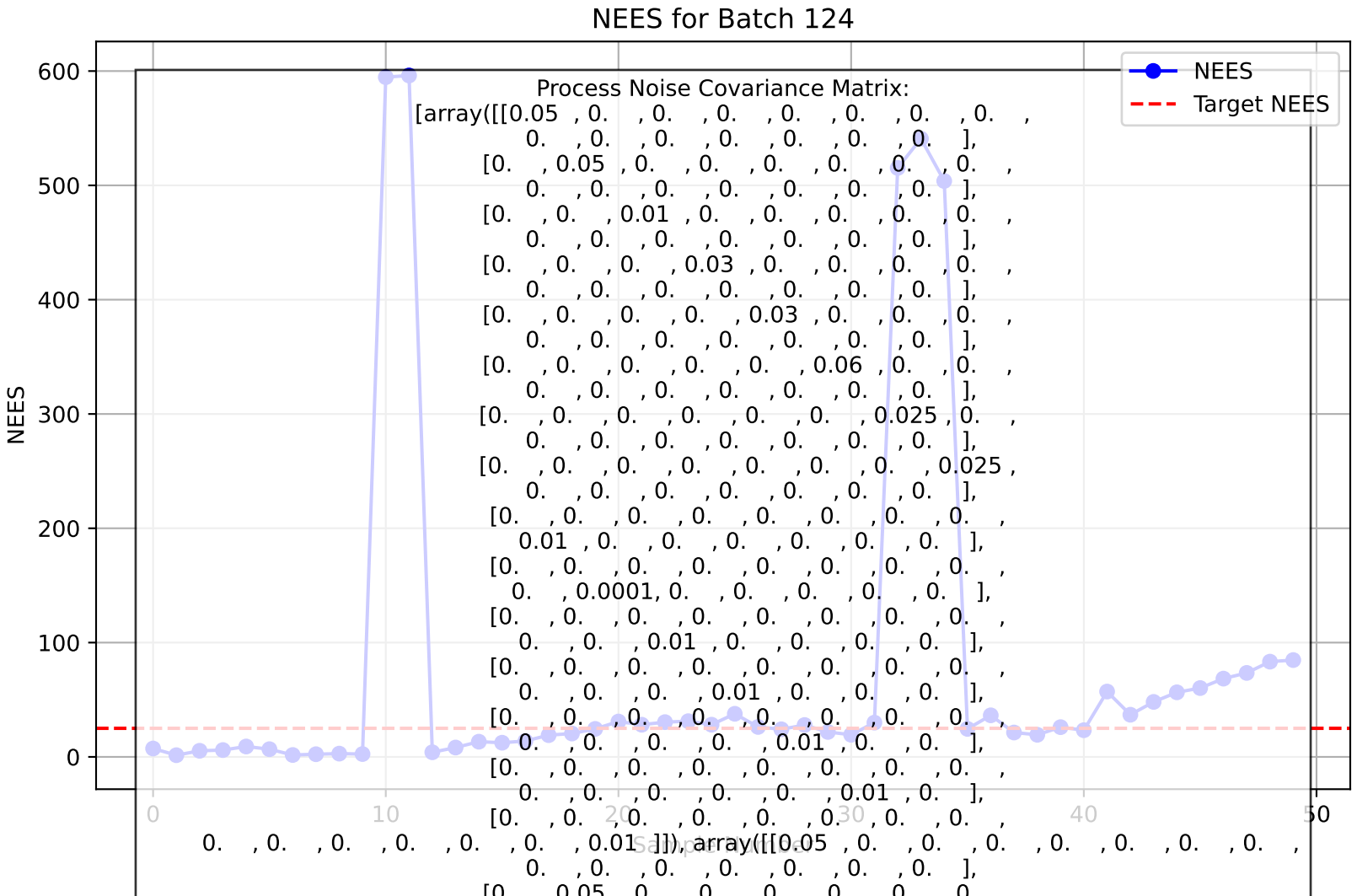

NEES for Batch 119
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-08, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50

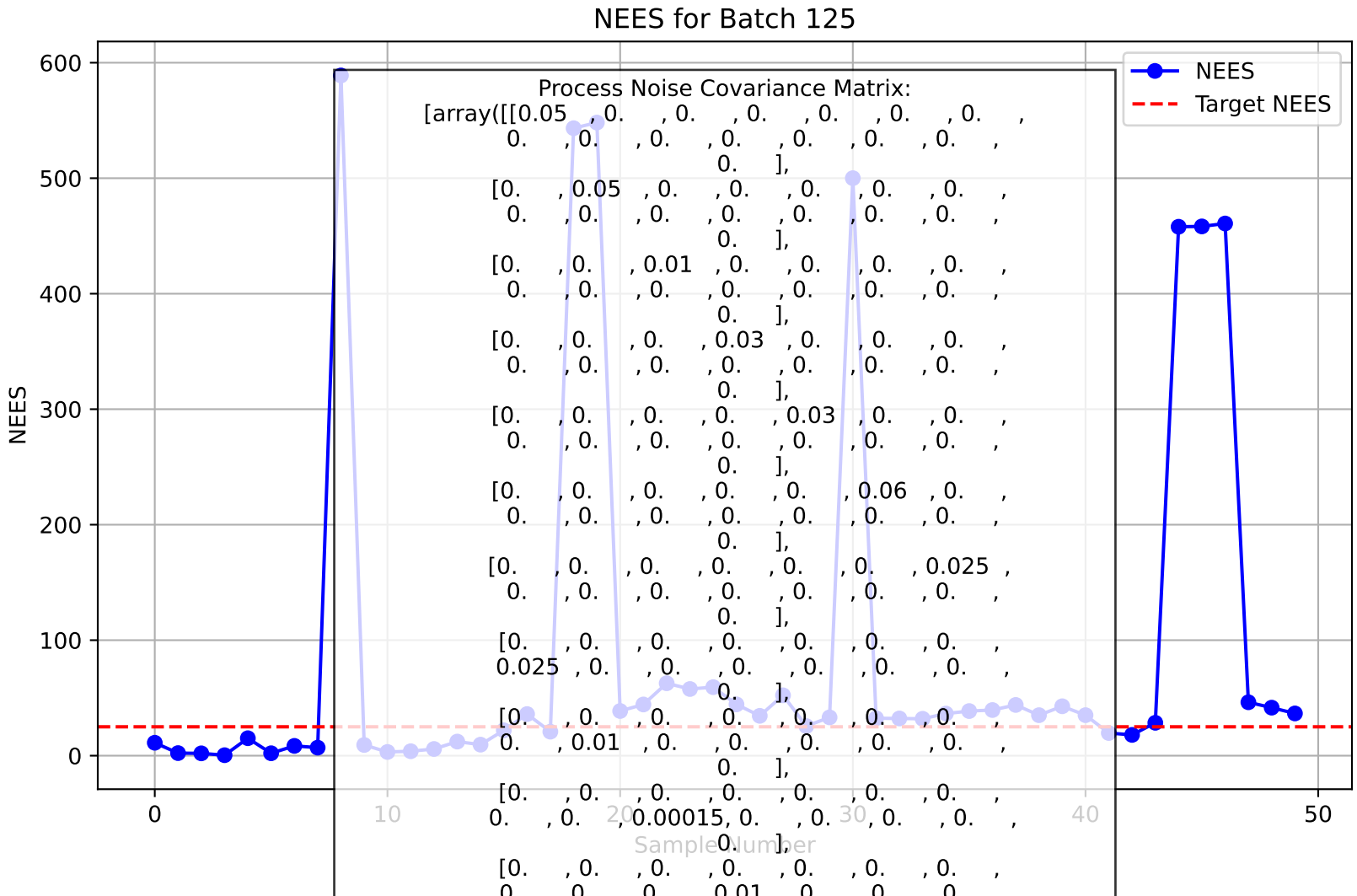

NEES for Batch 120
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
0
10
20
30
40
50
0
100
200
300
400
500
NEES

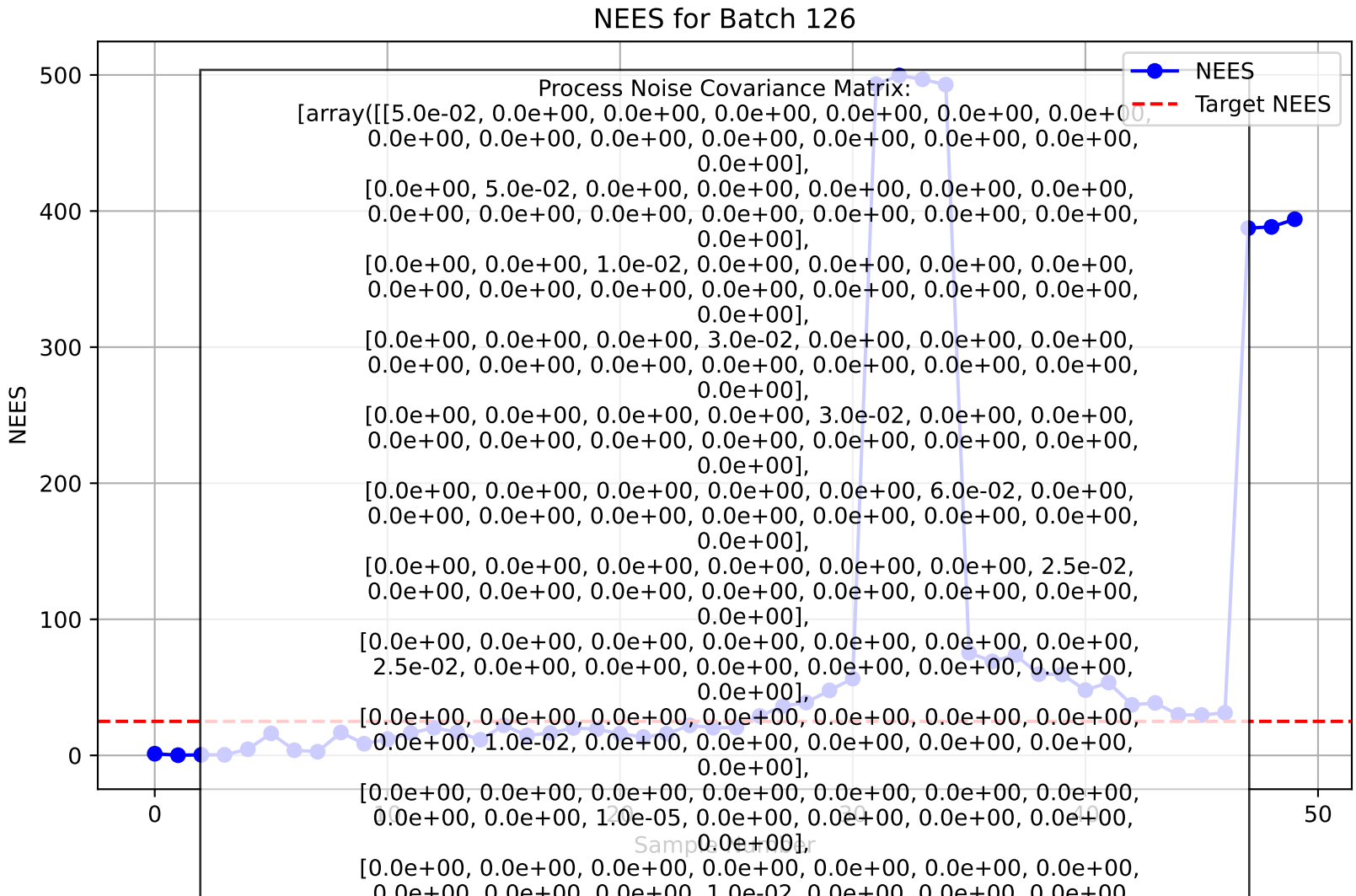

NEES for Batch 121
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.015, 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50

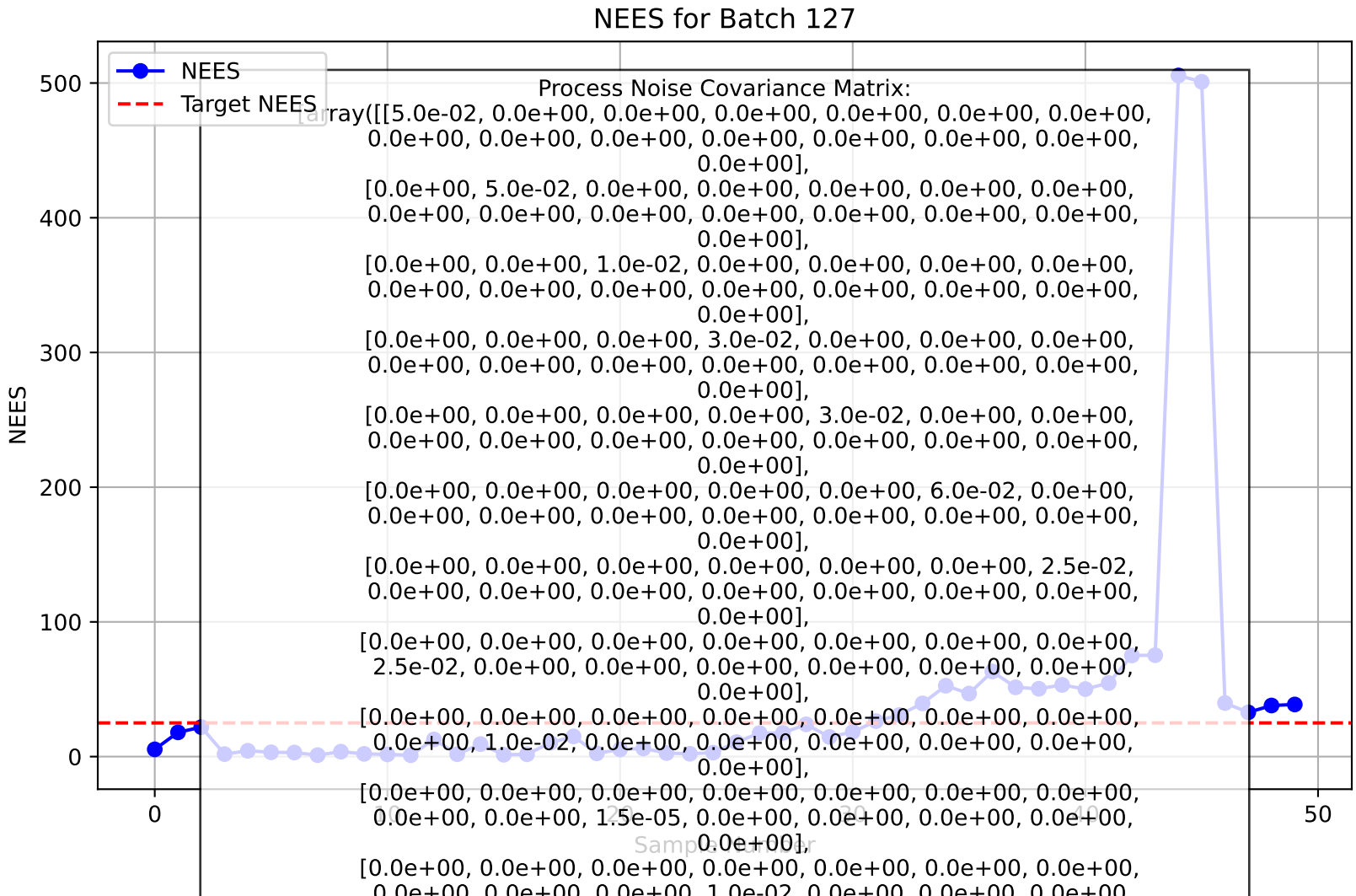

NEES for Batch 122
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001, 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
600
500
400
300
200
100
0
0
10
20
30
40
50

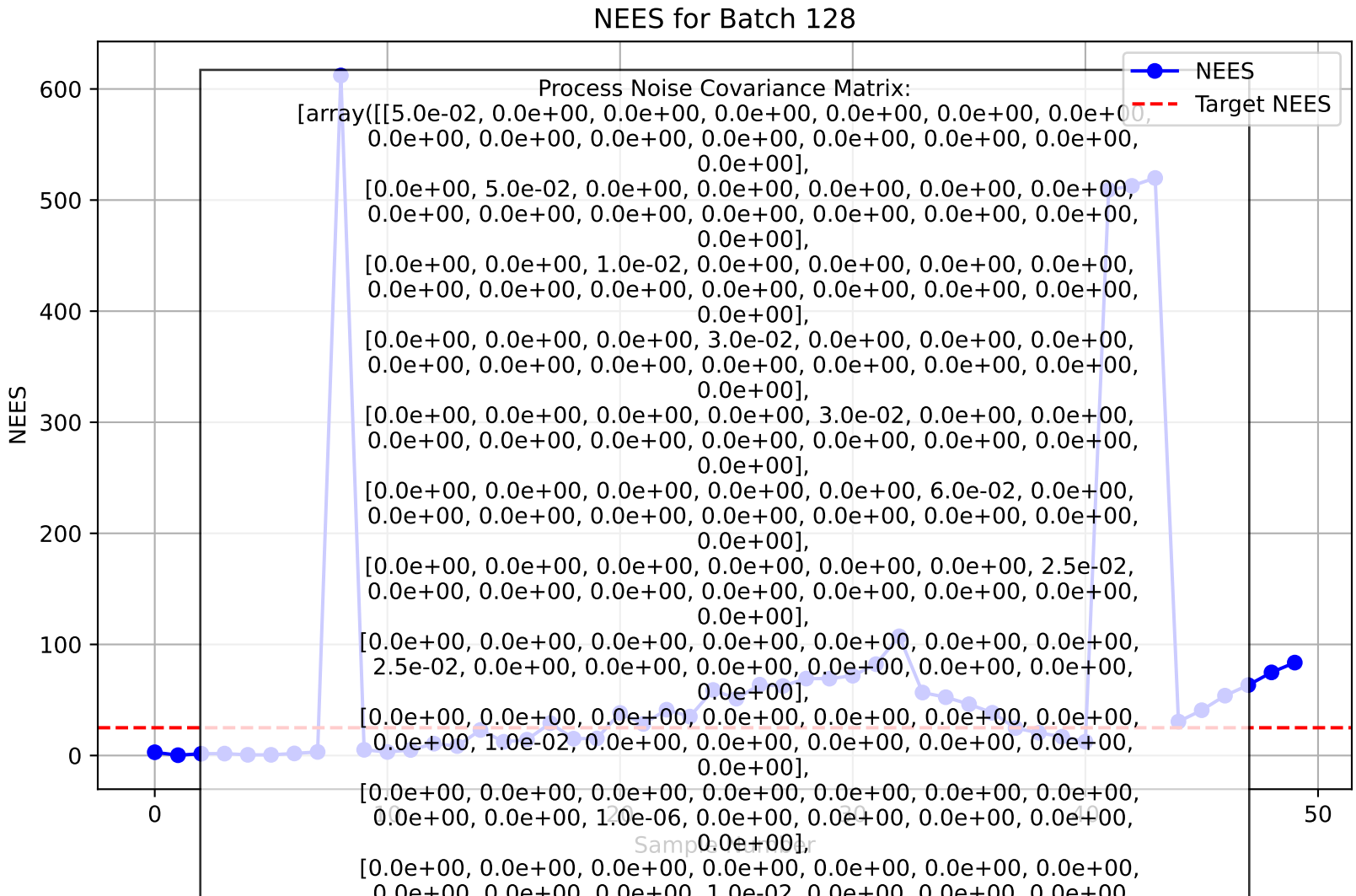

NEES for Batch 123
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0015, 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
600
500
400
300
200
100
0
0
10
20
30
40
50
Sample Index

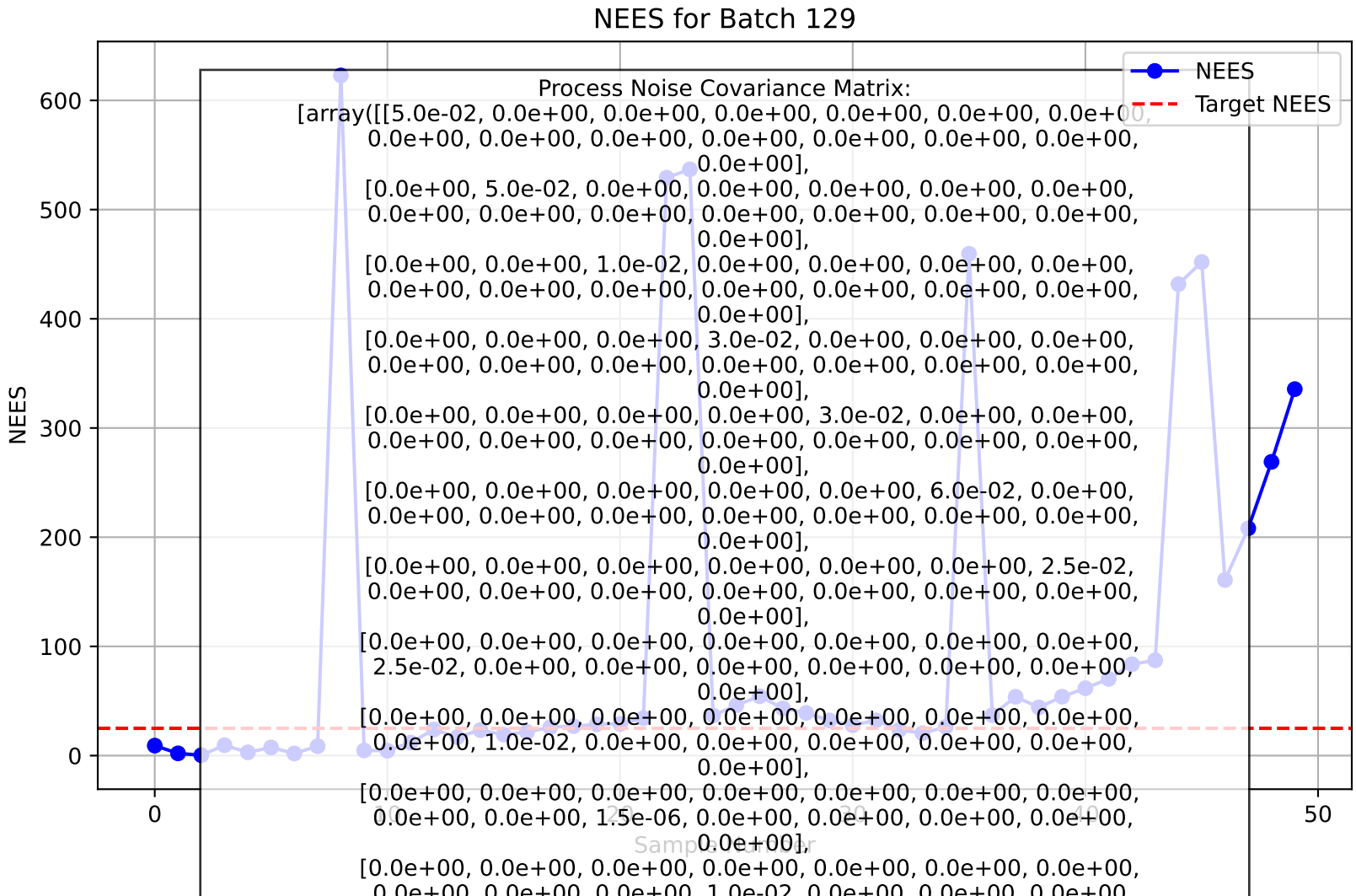

NEES for Batch 124
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001, 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
600
500
400
300
200
100
0
0
10
20
30
40
50
Sample Index

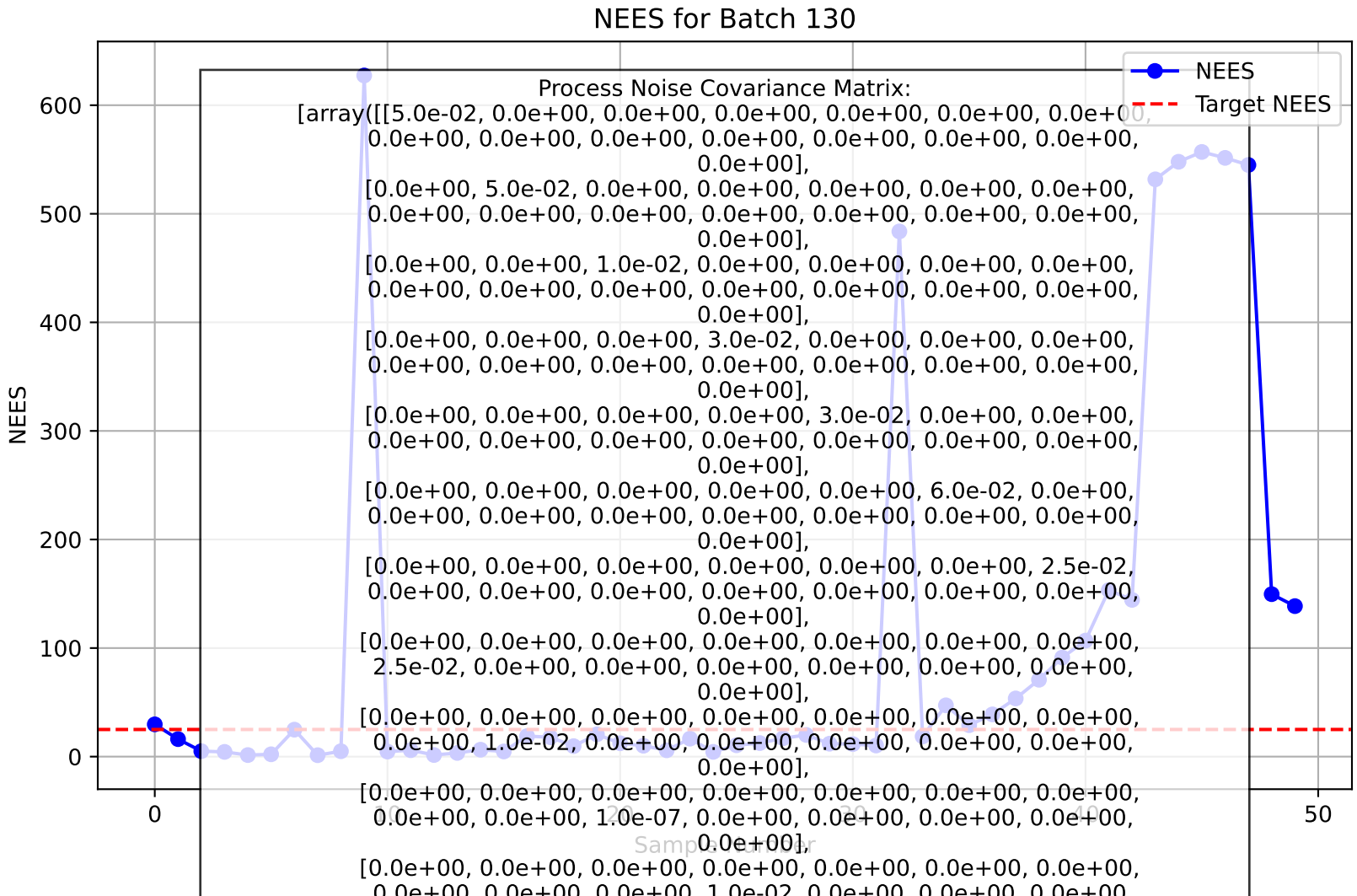

NEES for Batch 125
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.00015, 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,

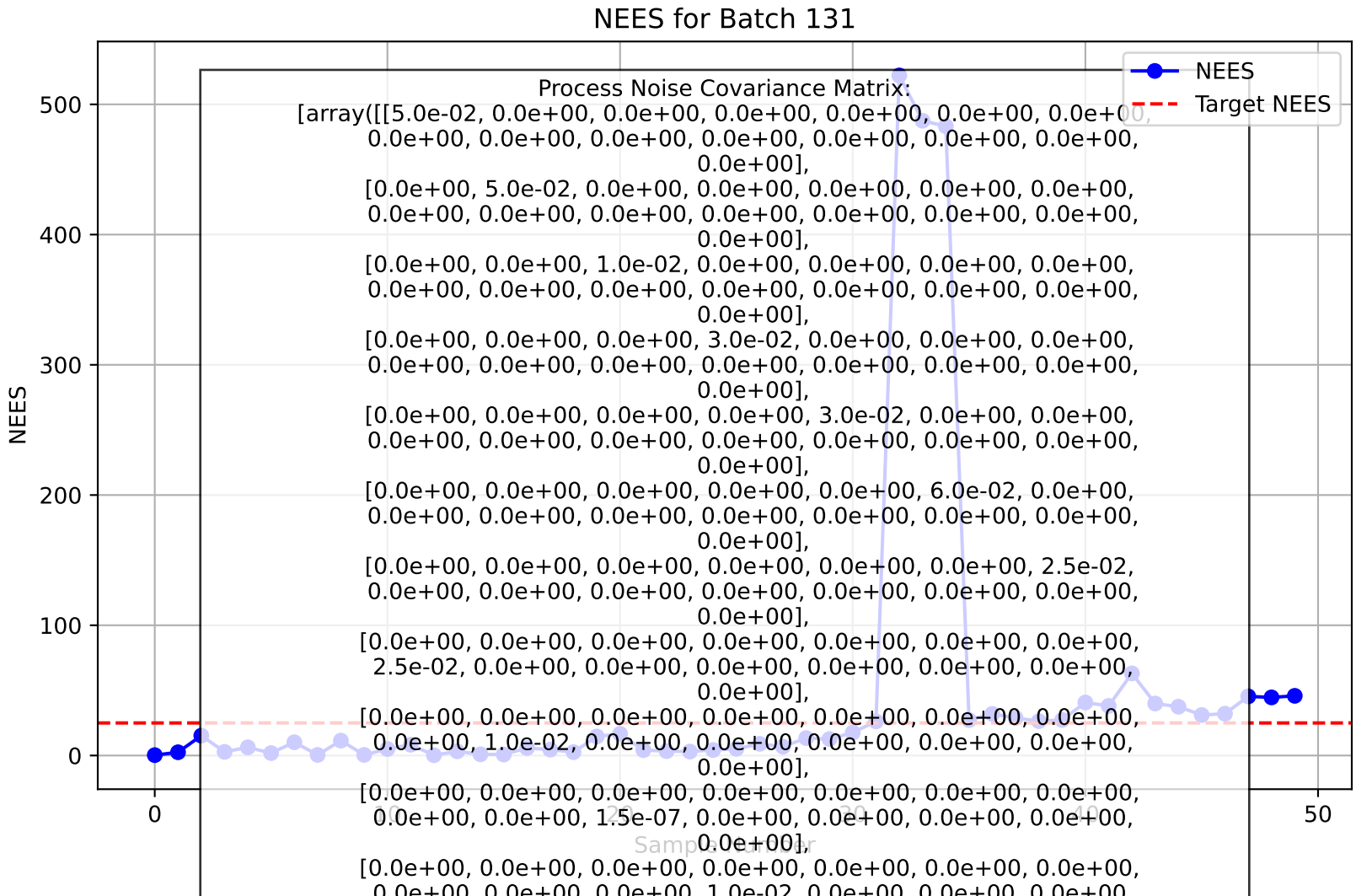

NEES for Batch 126
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50

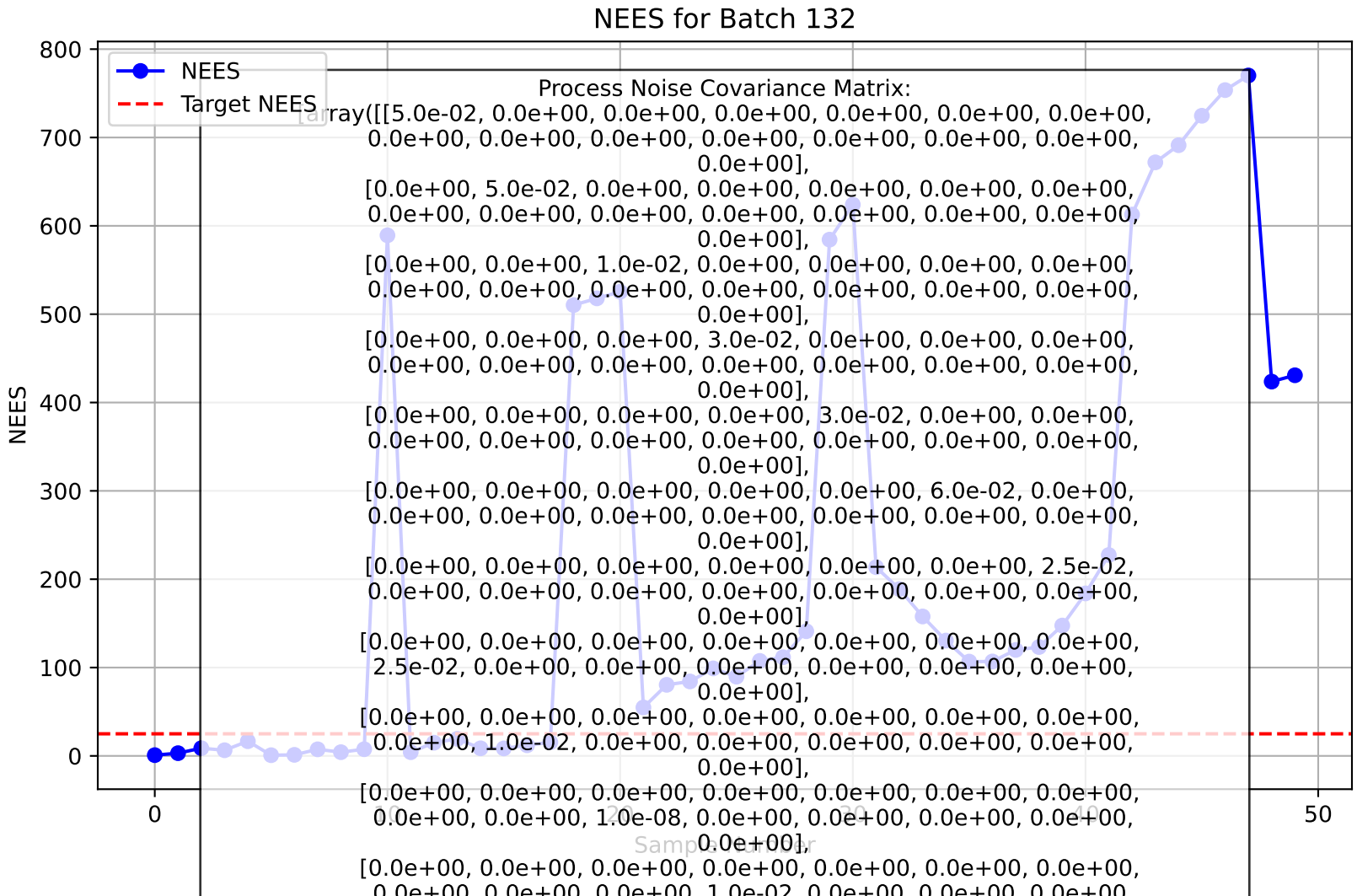

NEES for Batch 127
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.5e-05, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50
100
200
300
400
500

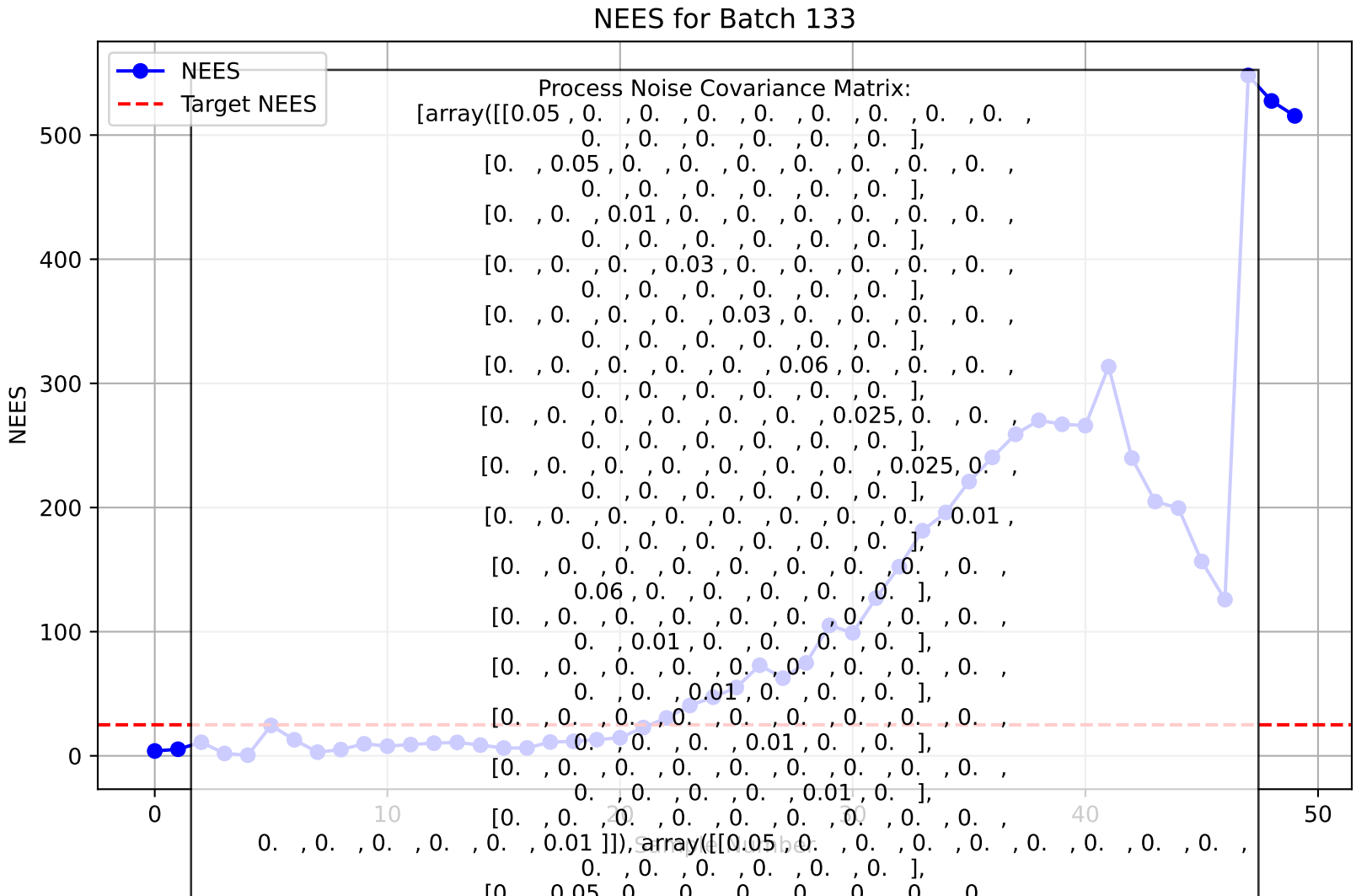

NEES for Batch 128
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

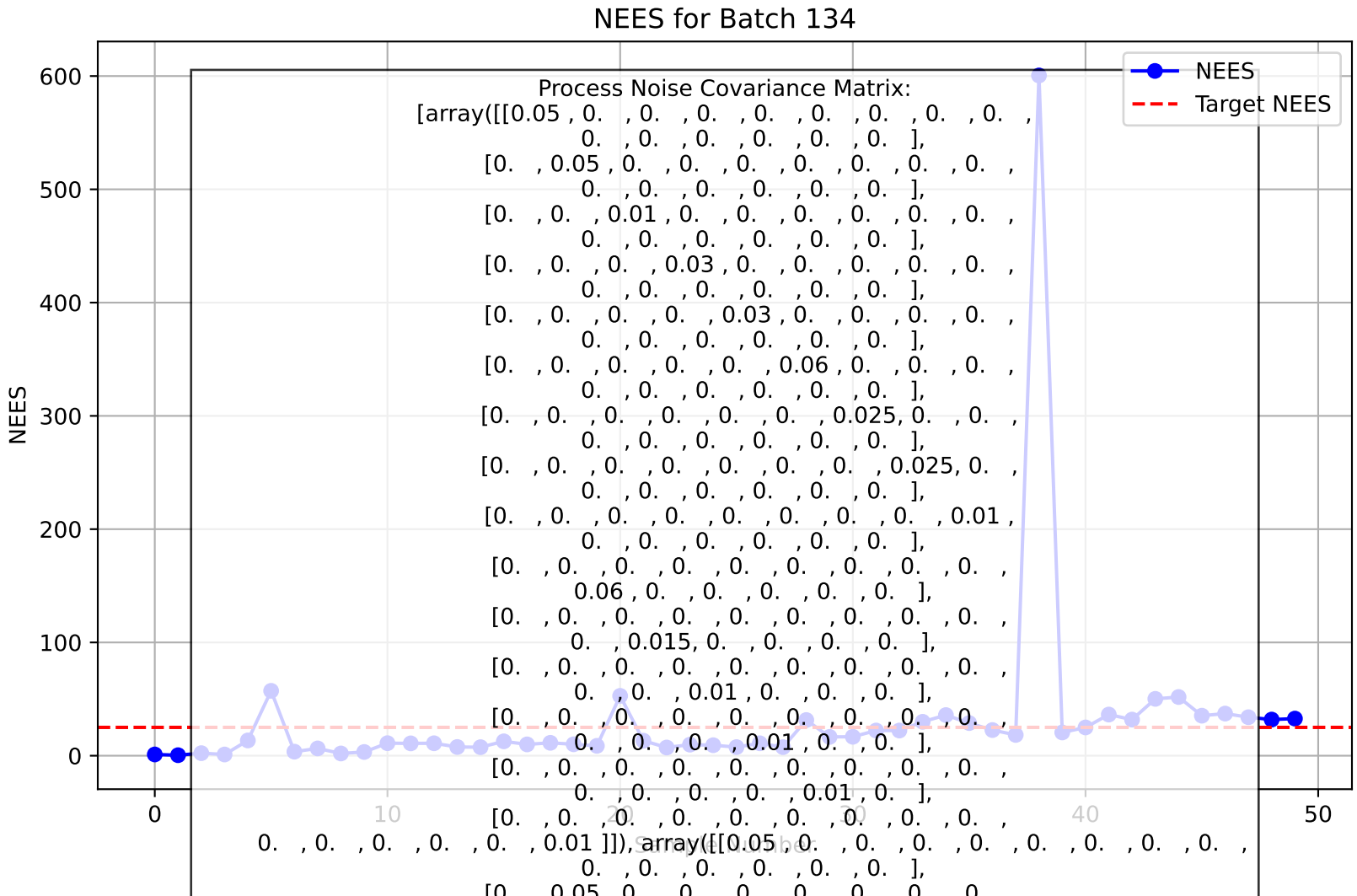

NEES for Batch 129
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.5e-06, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

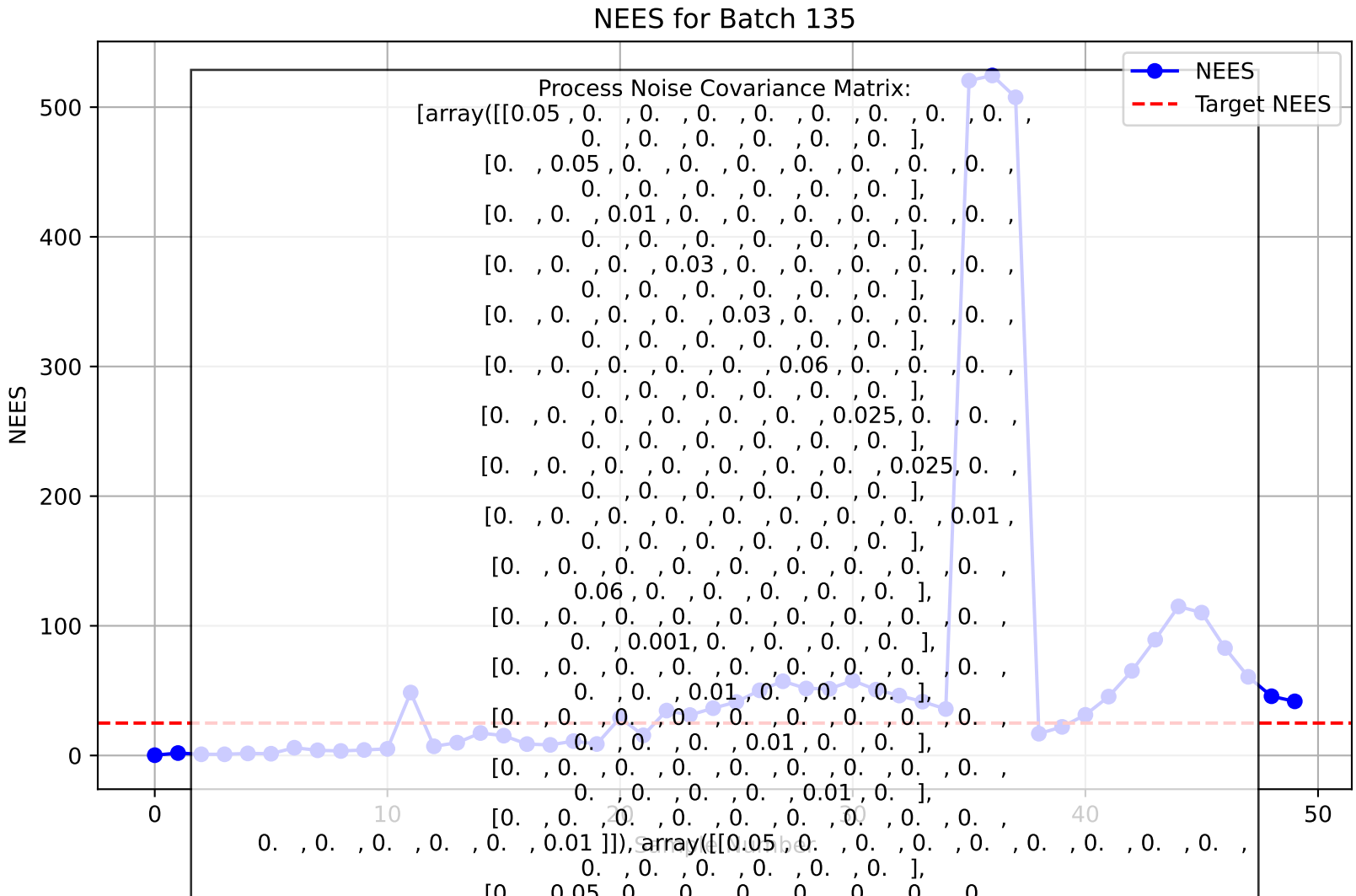

NEES for Batch 130
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

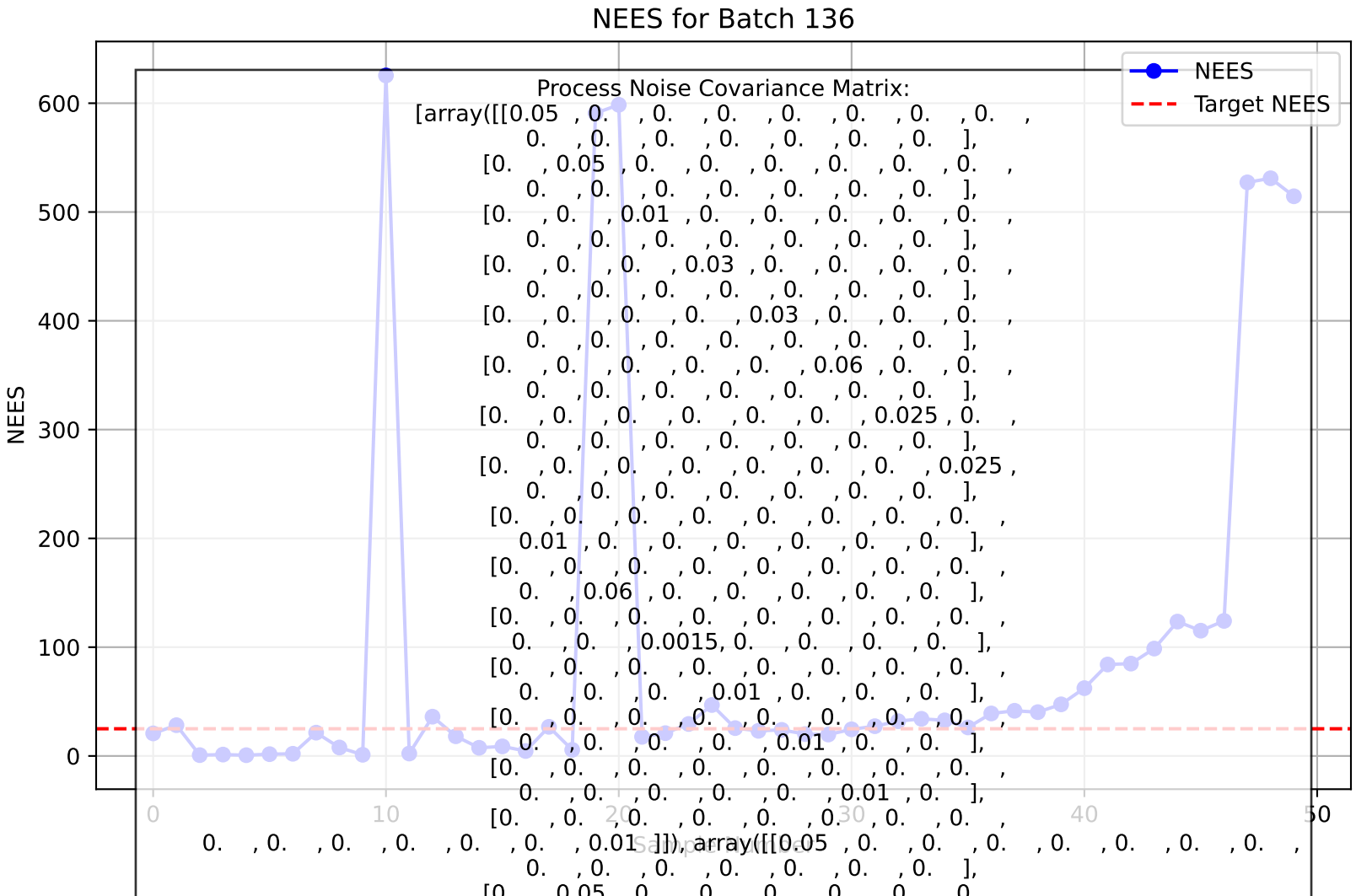

NEES for Batch 131
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.5e-07, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50

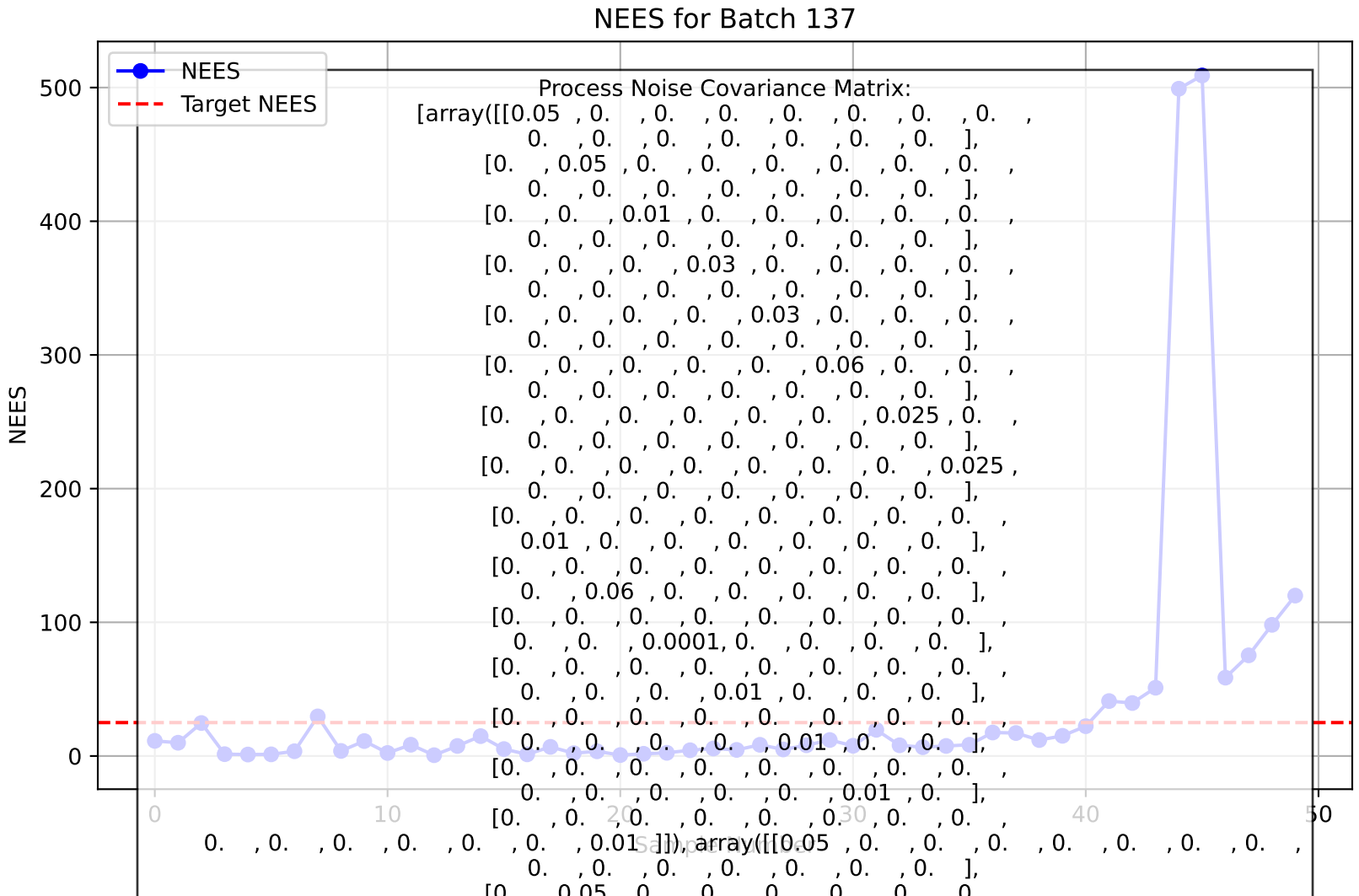

NEES for Batch 132
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 1.0e-08, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
800
700
600
500
400
300
200
100
0
0
50

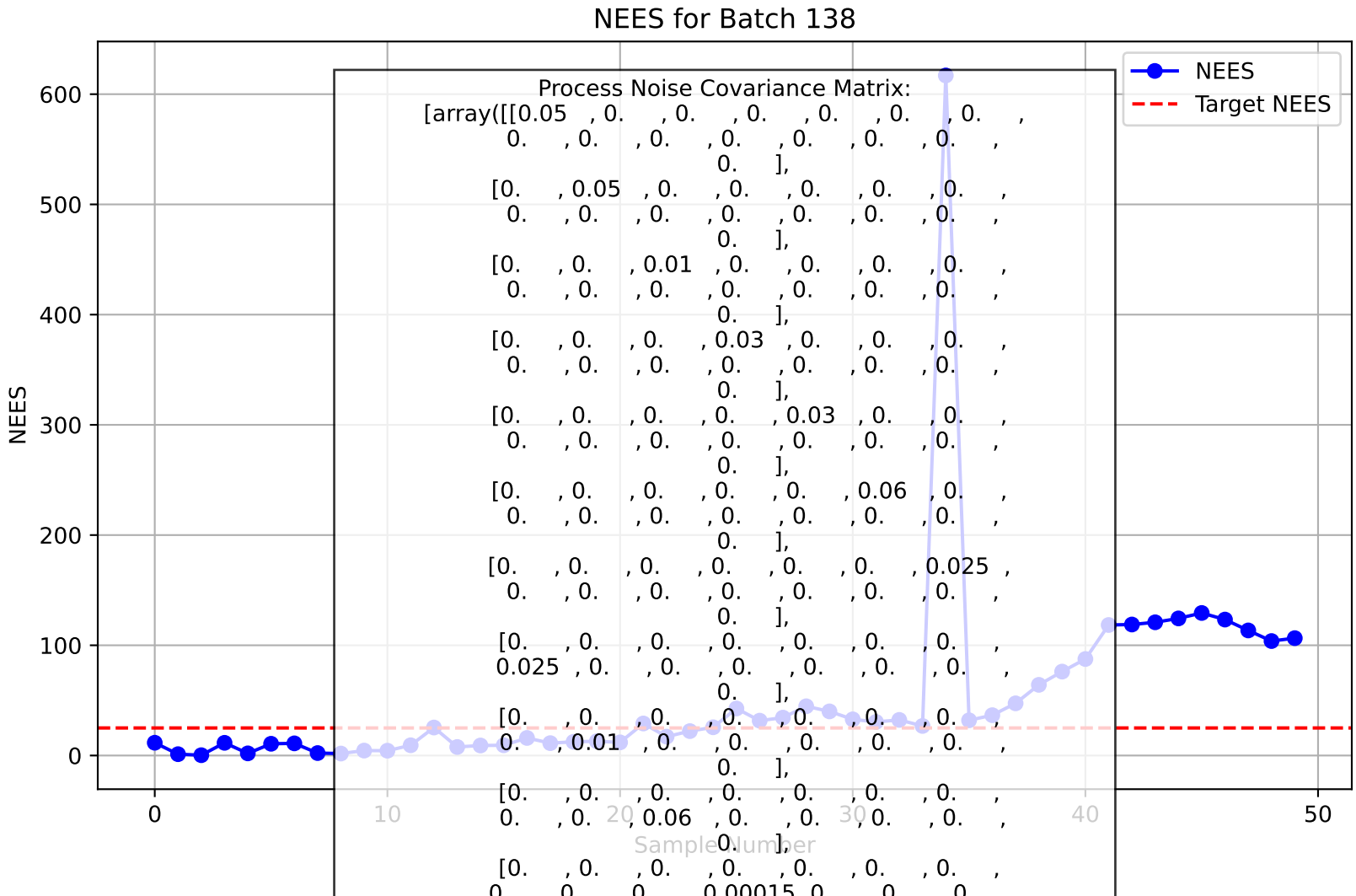

NEES for Batch 133
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
500
0
10
20
30
40
50

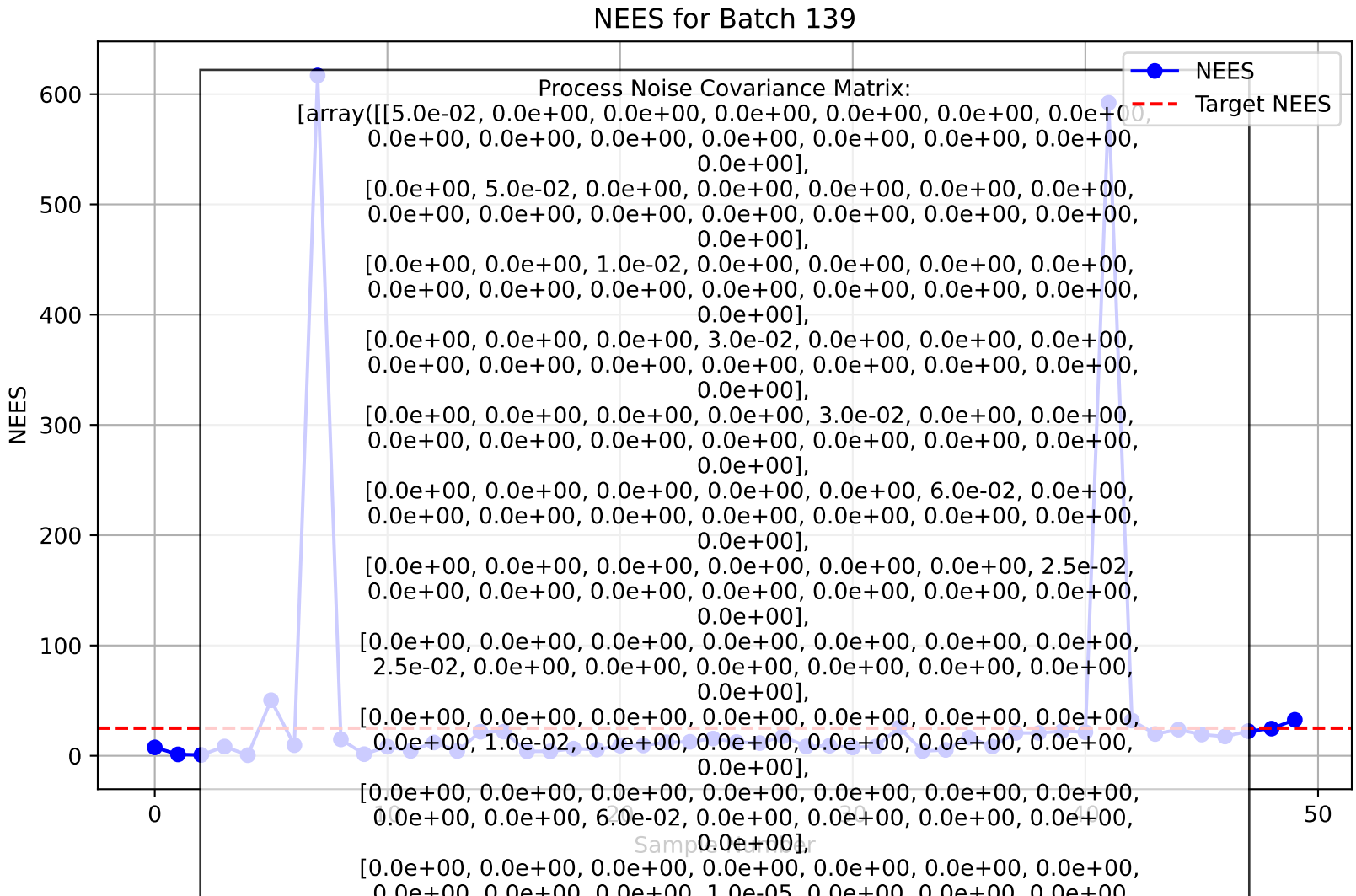

NEES for Batch 134
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.015, 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50

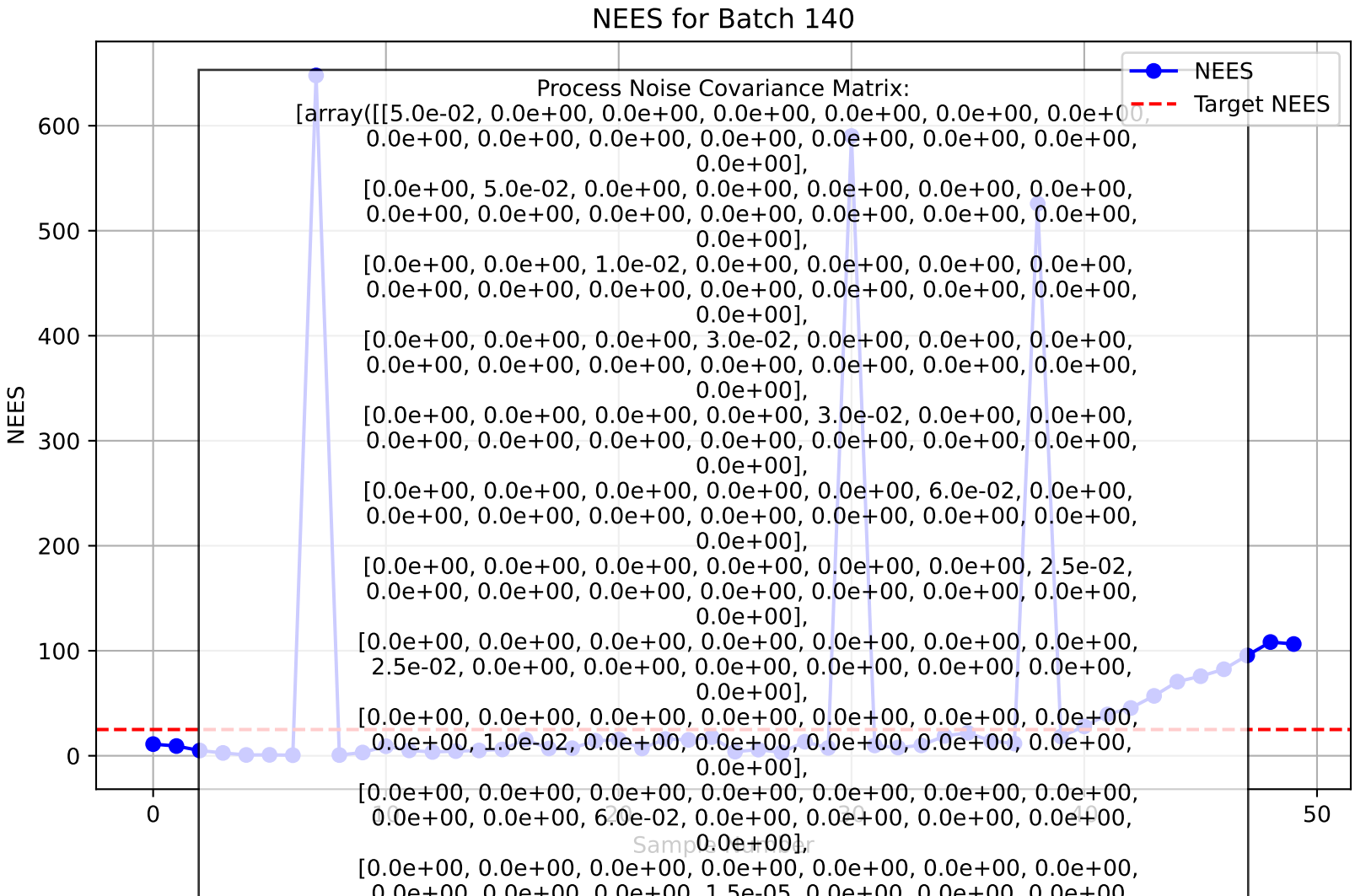

NEES for Batch 135
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.001, 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
0
100
200
300
400
500
0
10
20
30
40
50

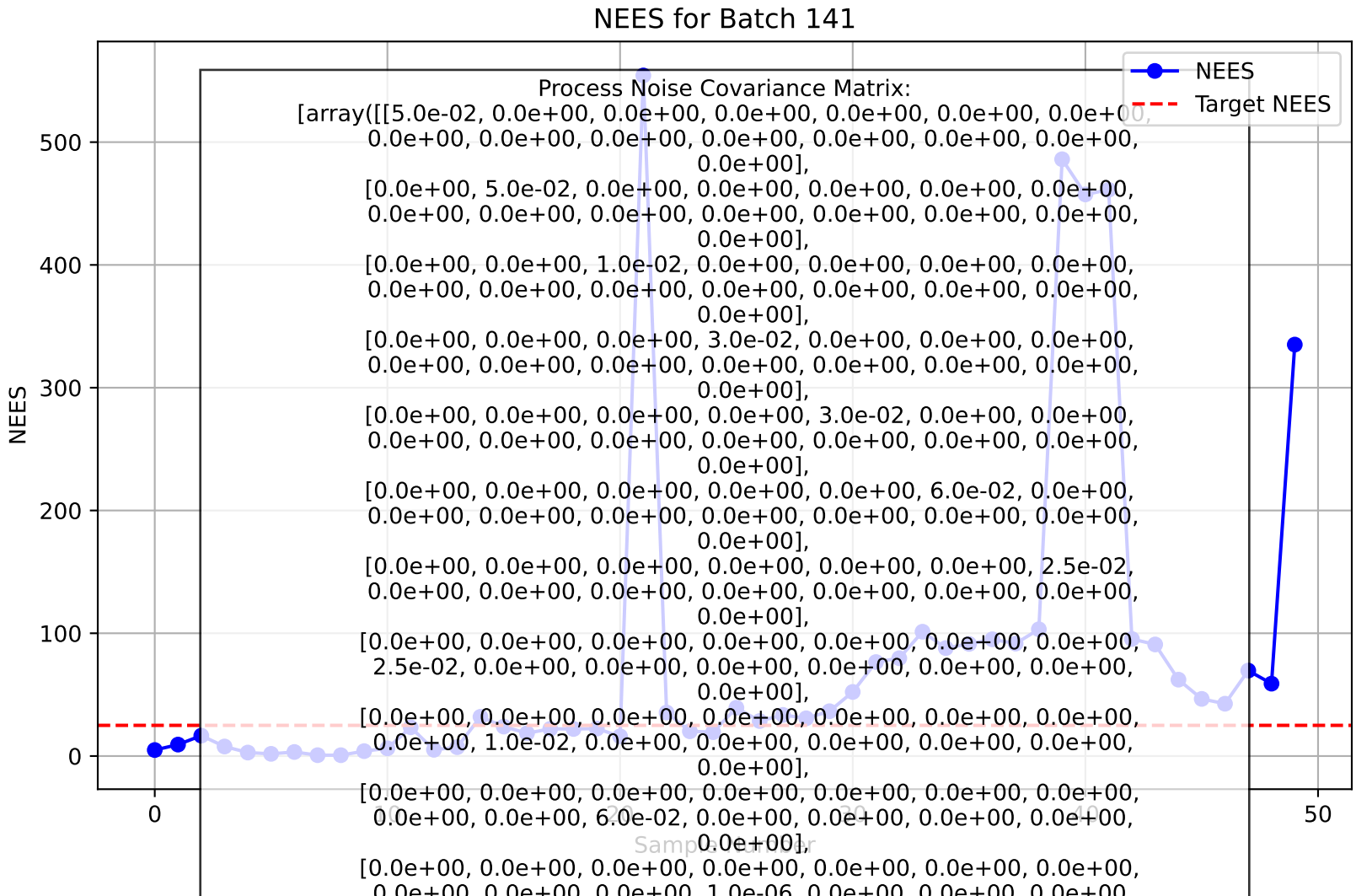

NEES for Batch 136
NEES
Target NEES
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0015, 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.


NEES for Batch 137
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0001, 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
500
400
300
200
100
0
0
10
20
30
40
50
Sample Index
NEES


NEES for Batch 138
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.00015 , 0. , 0. , 0. ,


NEES for Batch 139
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
600
0
50
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-05, 0.0e+00, 0.0e+00, 0.0e+00,


NEES for Batch 140
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.5e-05, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50


NEES for Batch 141
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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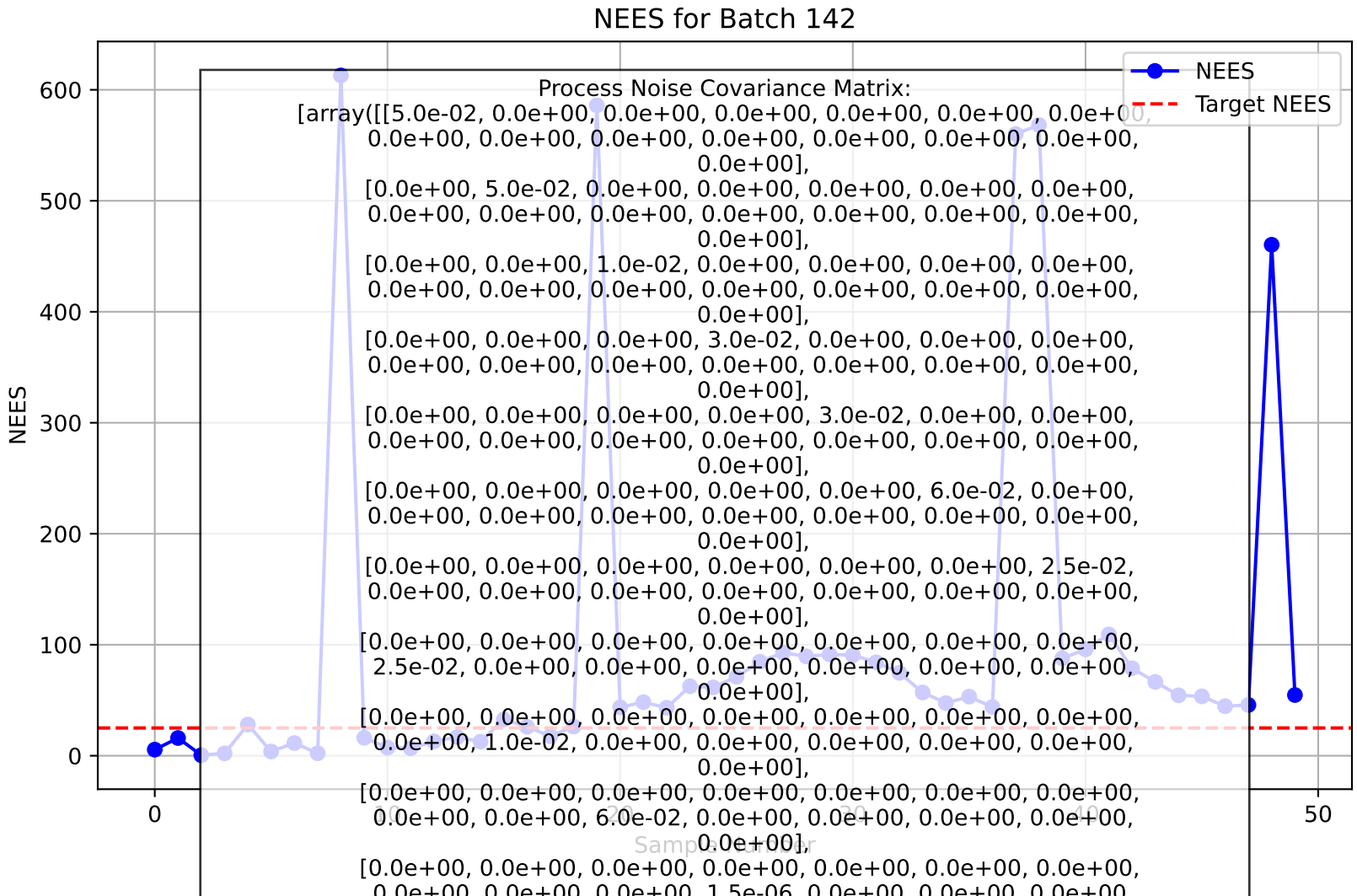
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-06, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
0
100
200
300
400
500
0
50


NEES for Batch 142
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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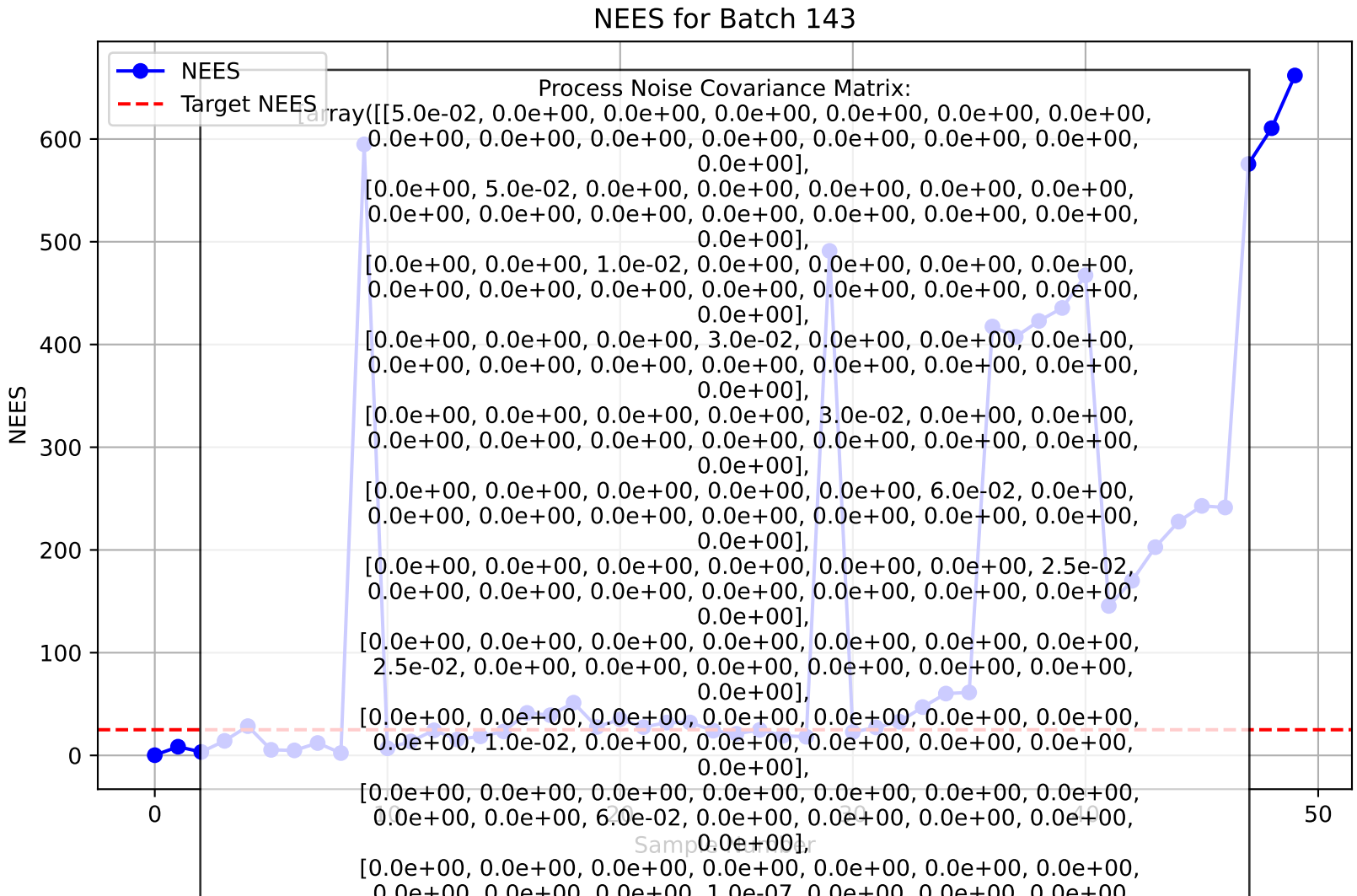
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.5e-06, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600
500
400
300
200
100
0
0
50


NEES for Batch 143
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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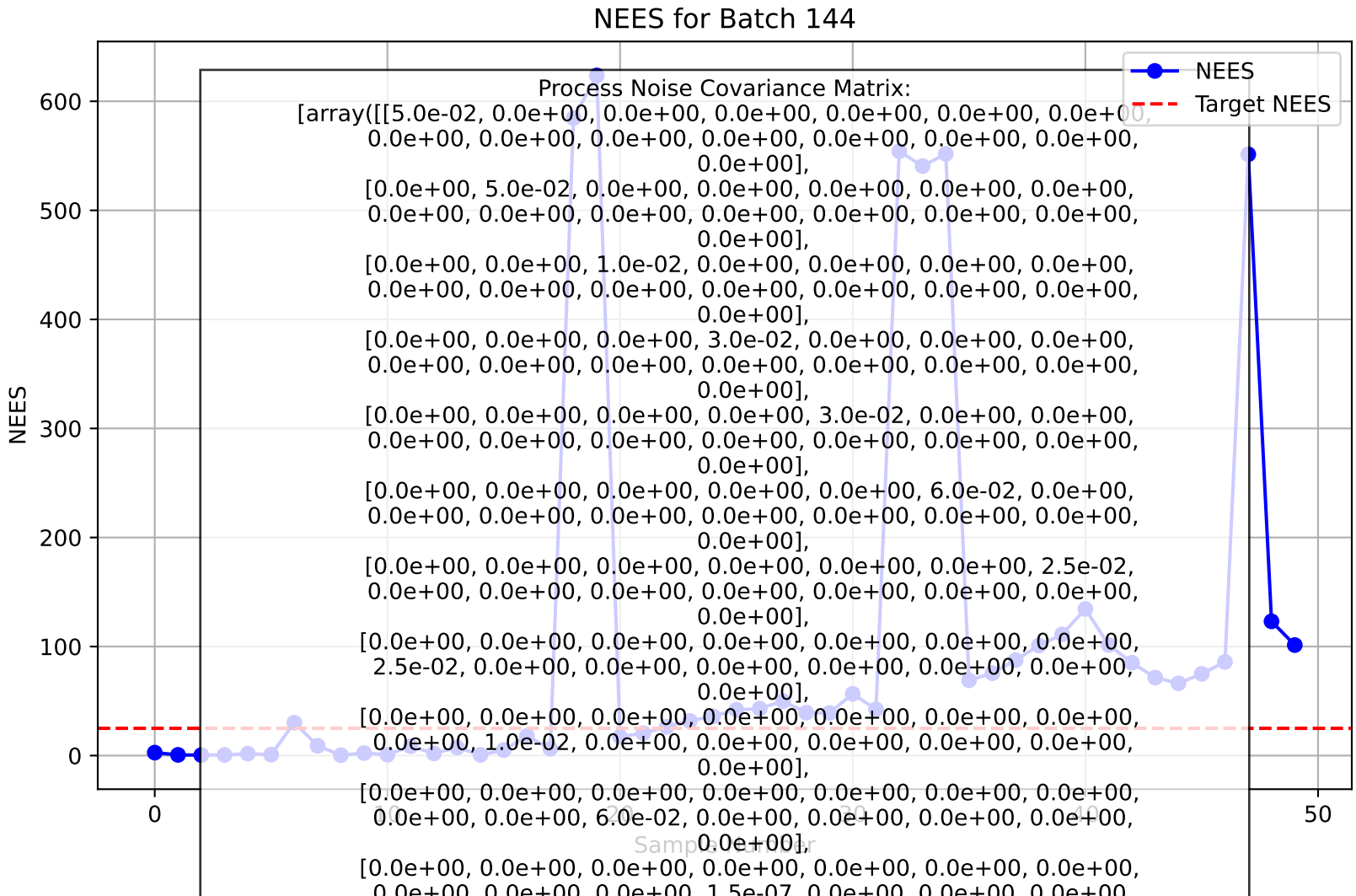
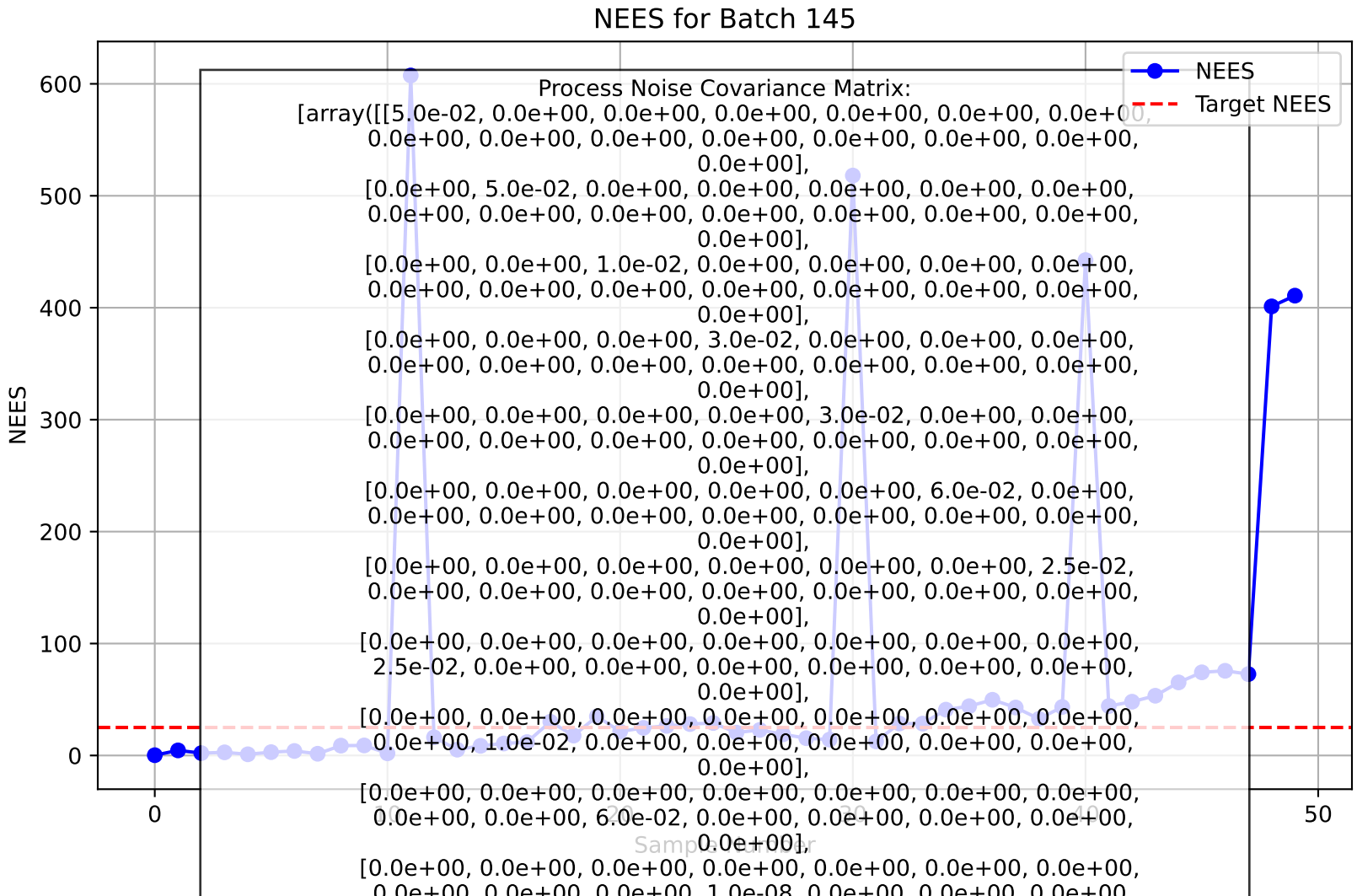
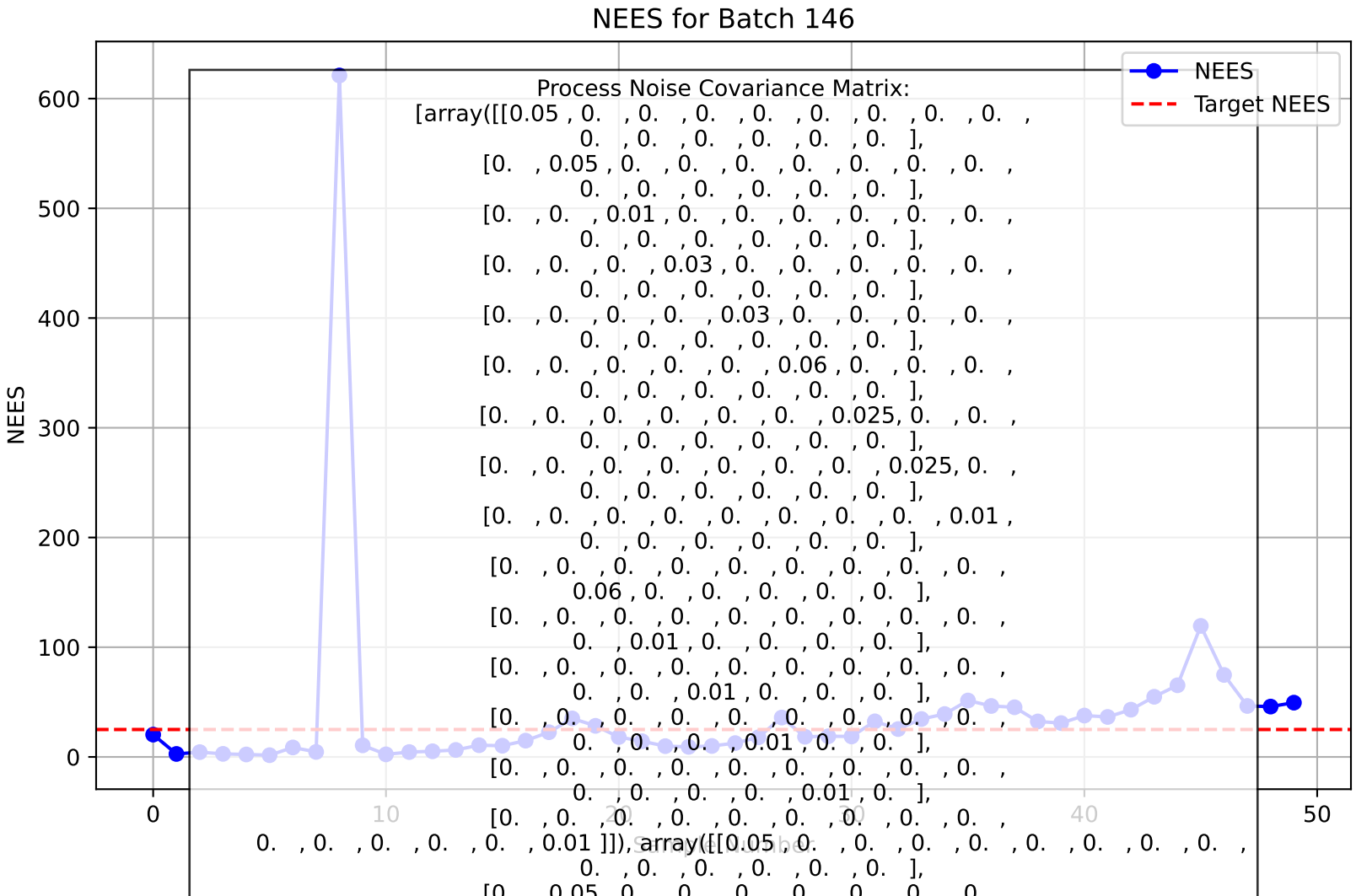
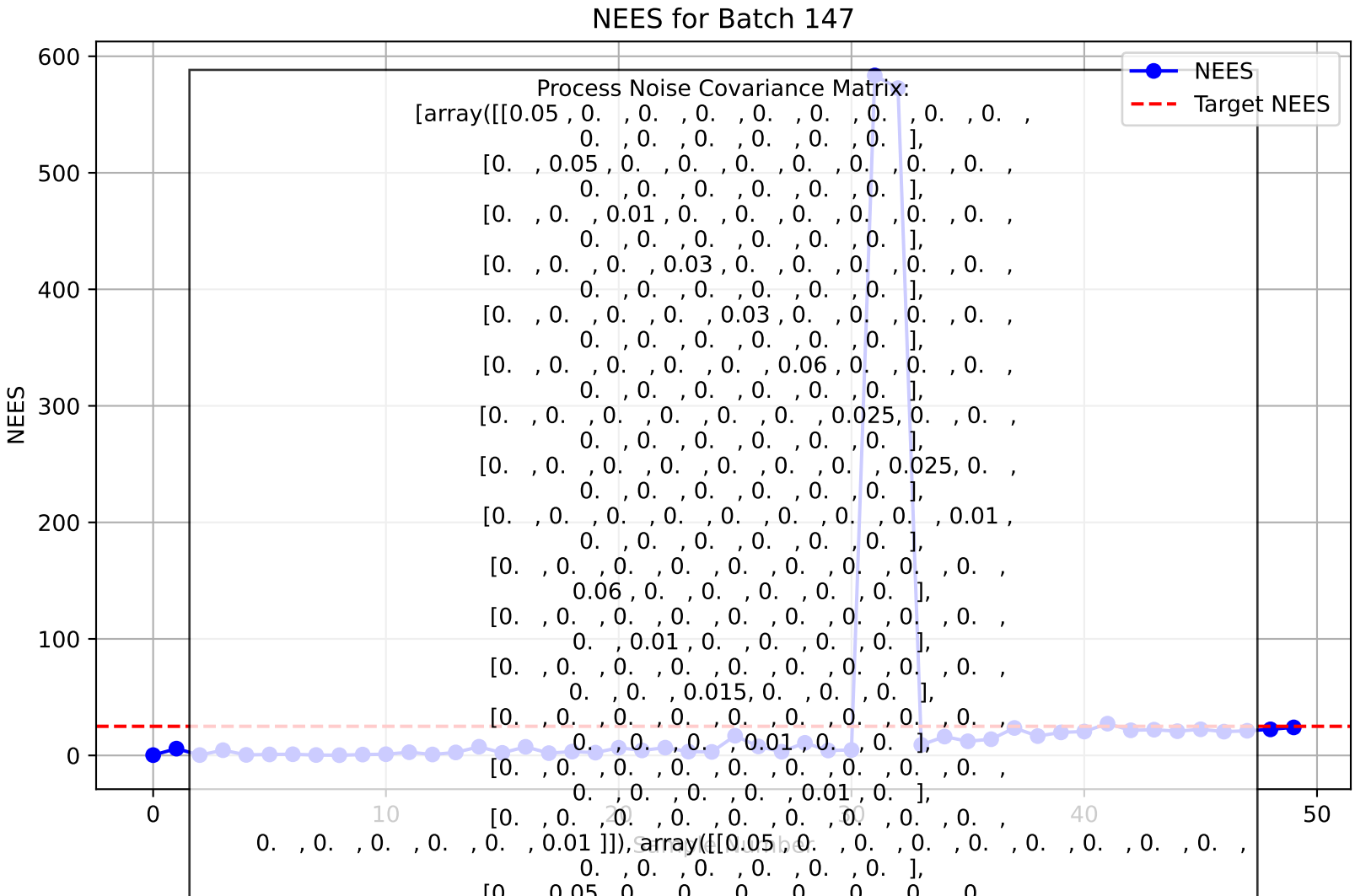
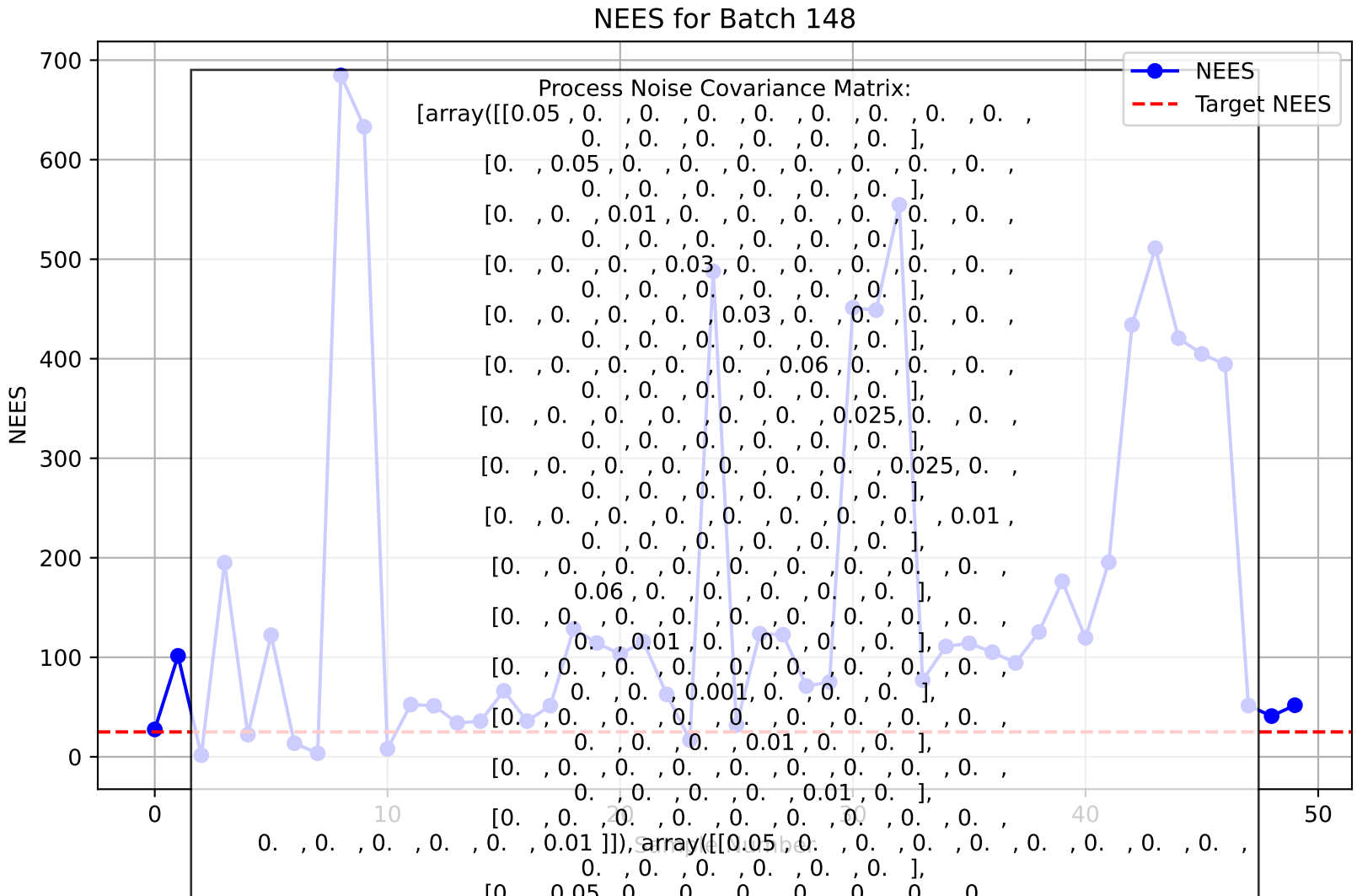
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-07, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

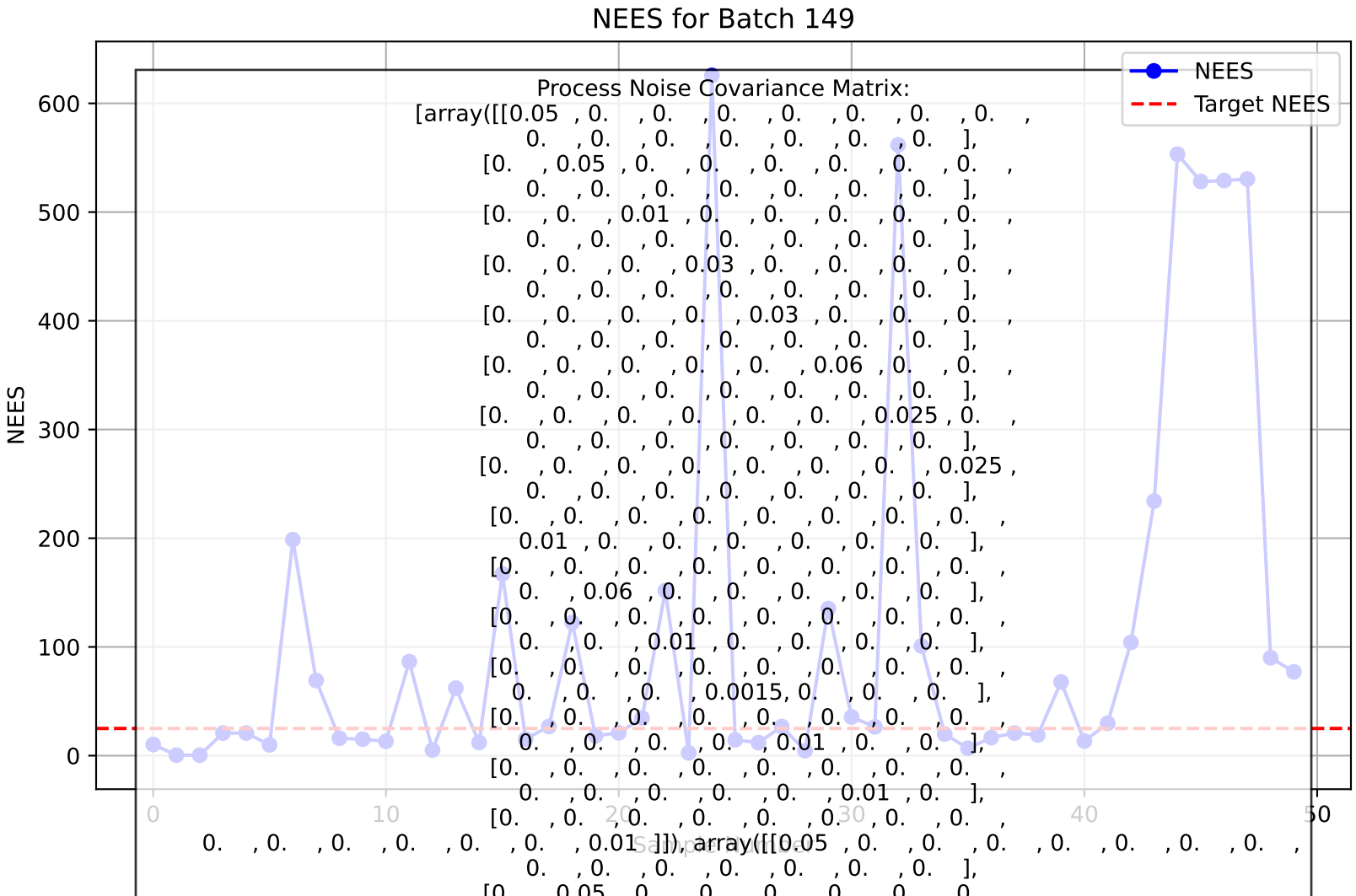

NEES for Batch 144
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.5e-07, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600
500
400
300
200
100
0
0
50
Sample Number

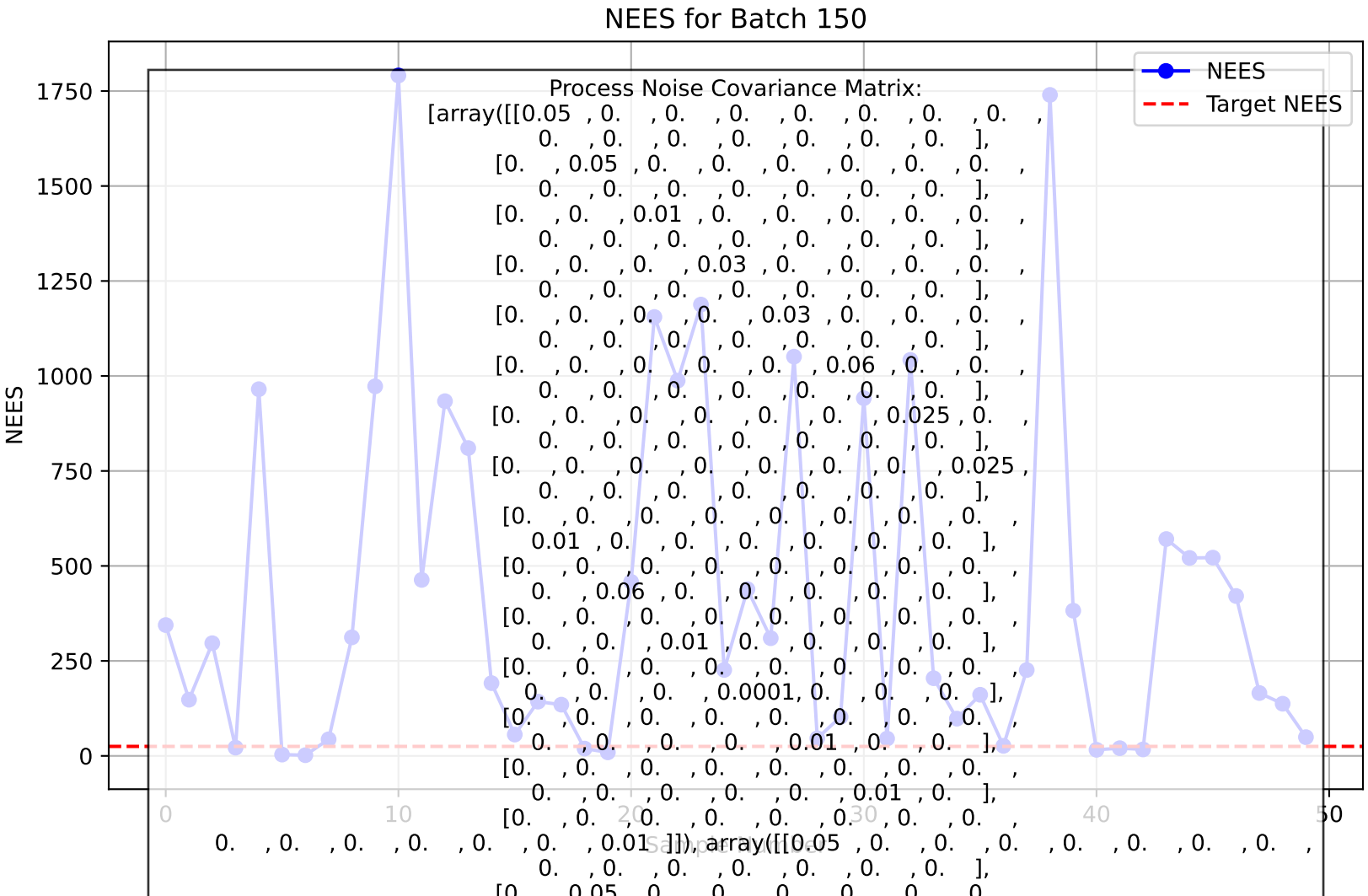

NEES for Batch 145
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-08, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50


NEES for Batch 146
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50


NEES for Batch 147
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.015, 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Batch Number
0
100
200
300
400
500
600
0
10
20
30
40
50


NEES for Batch 148
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001, 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
NEES
0
100
200
300
400
500
600
700
0
10
20
30
40
50


NEES for Batch 149
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0015, 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50
Sample Index


NEES for Batch 150
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
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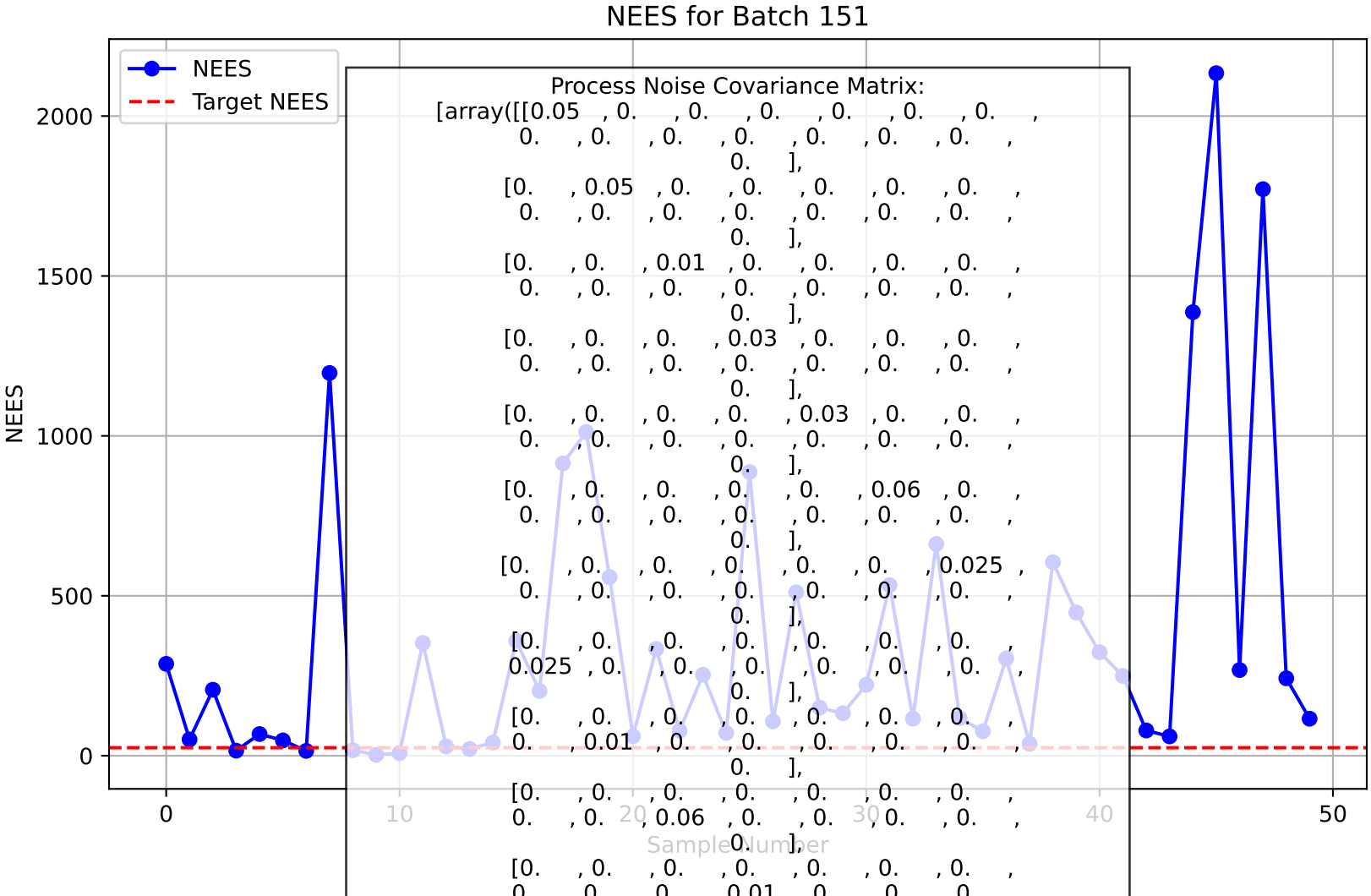
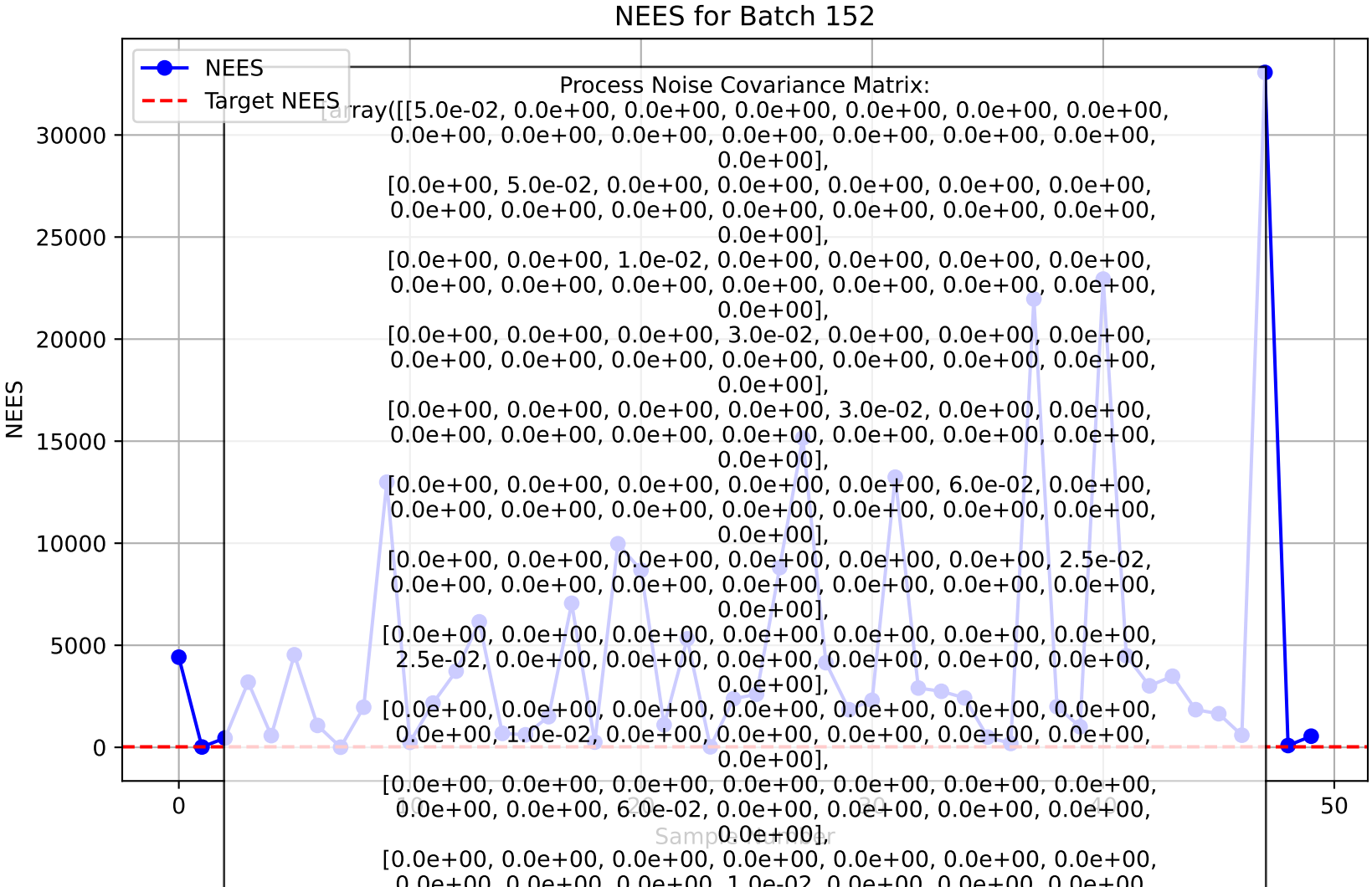
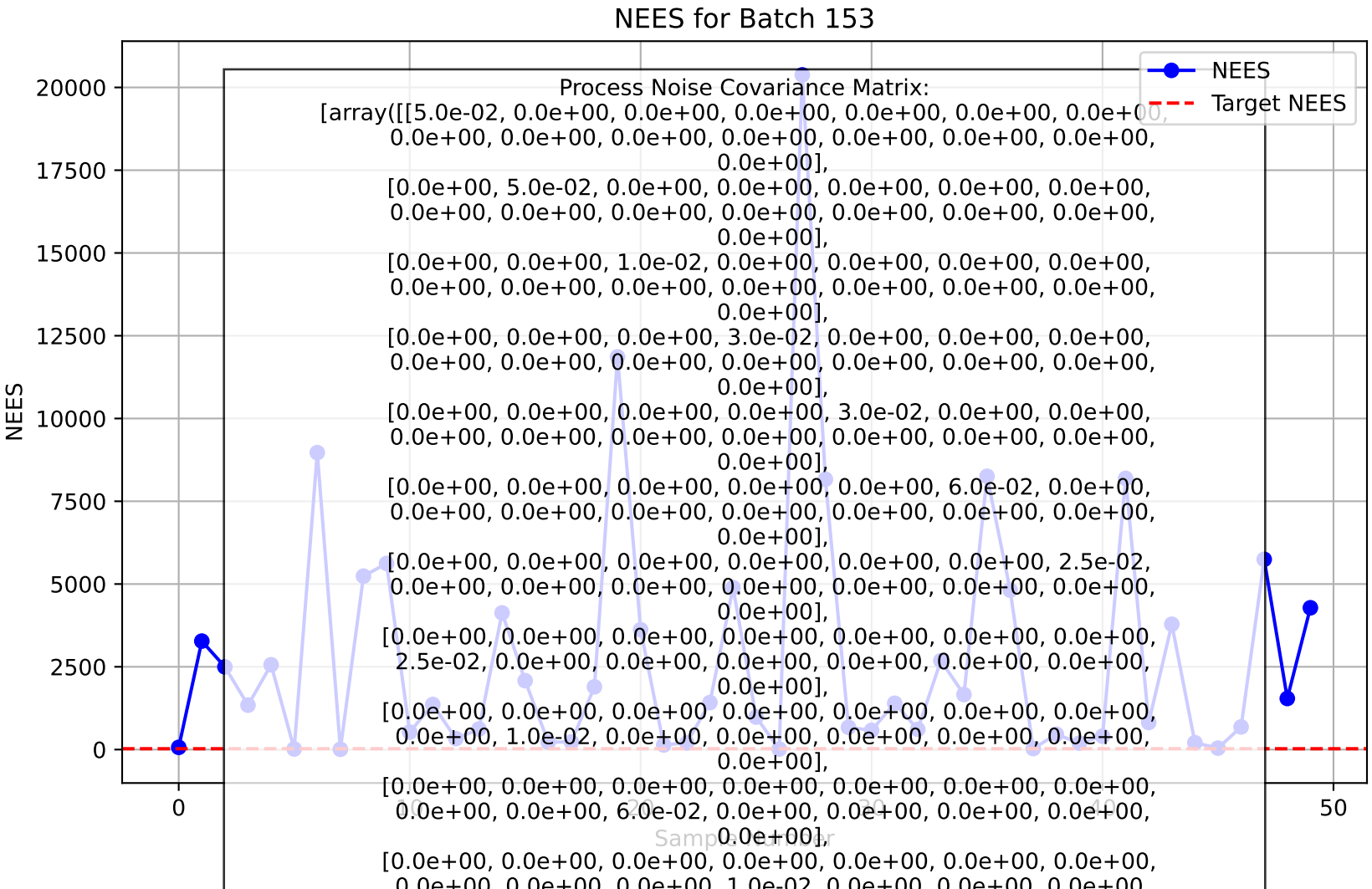
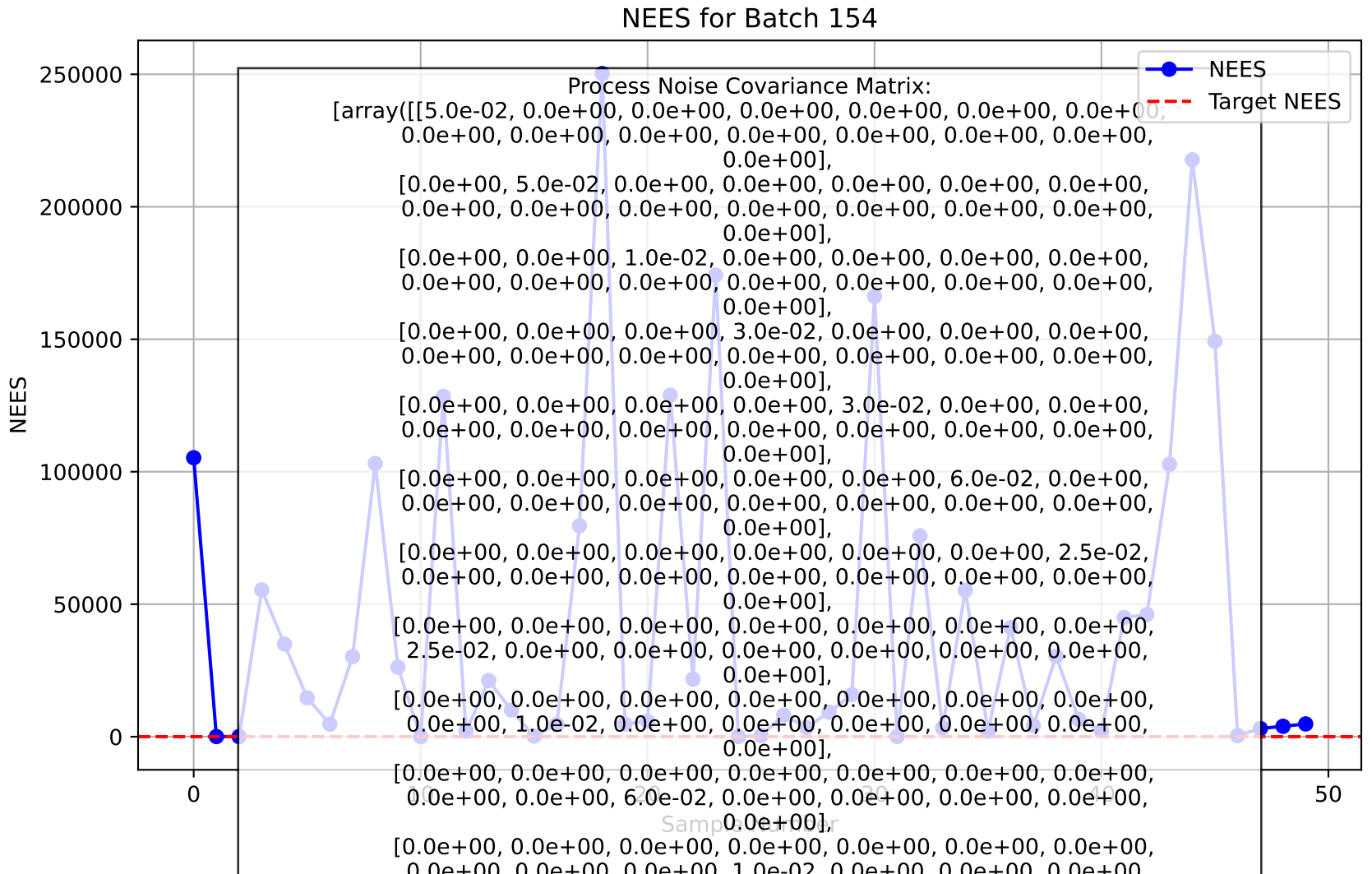
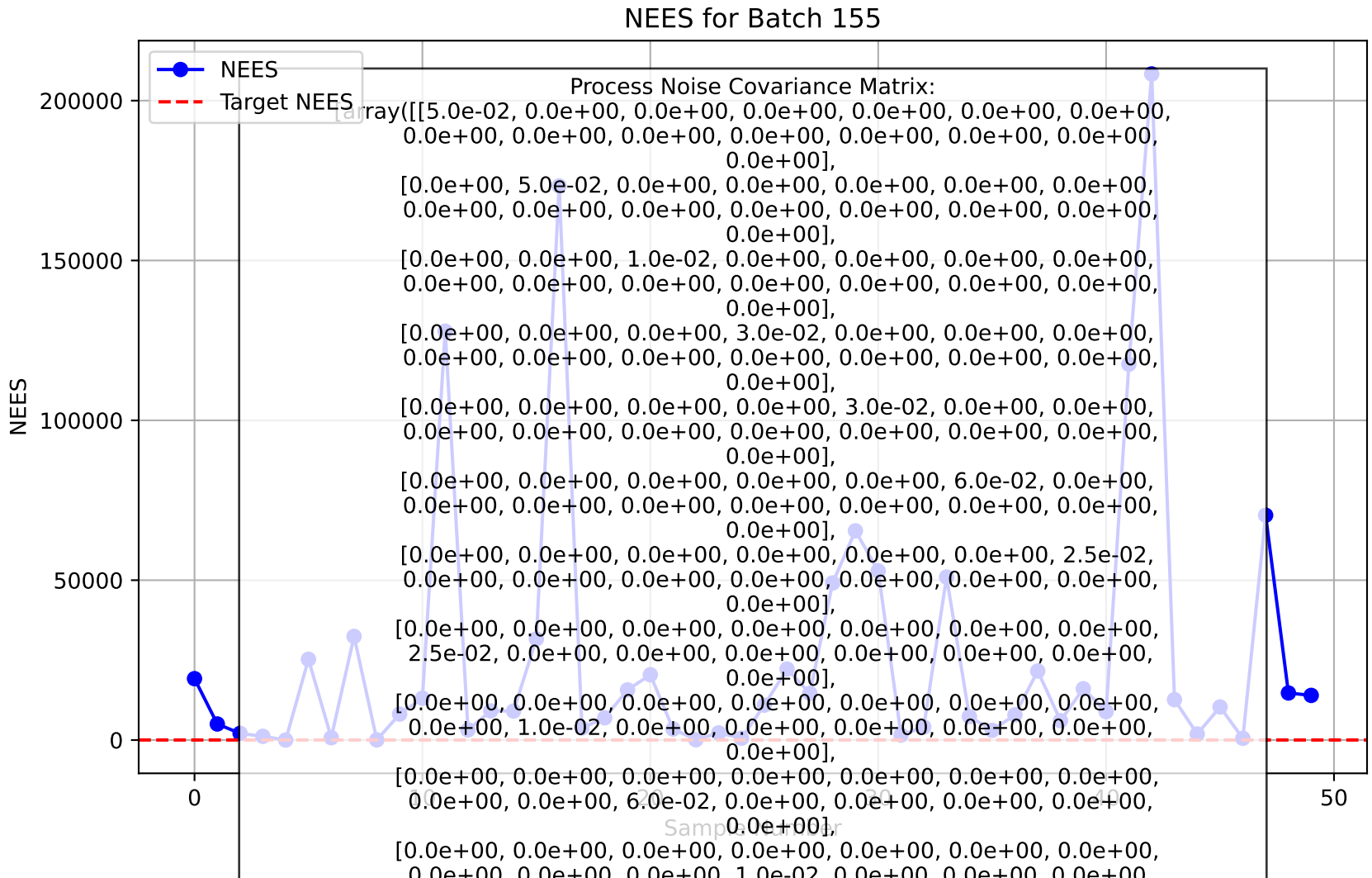
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0001, 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
0
250
500
750
1000
1250
1500
1750
0
10
20
30
40
50

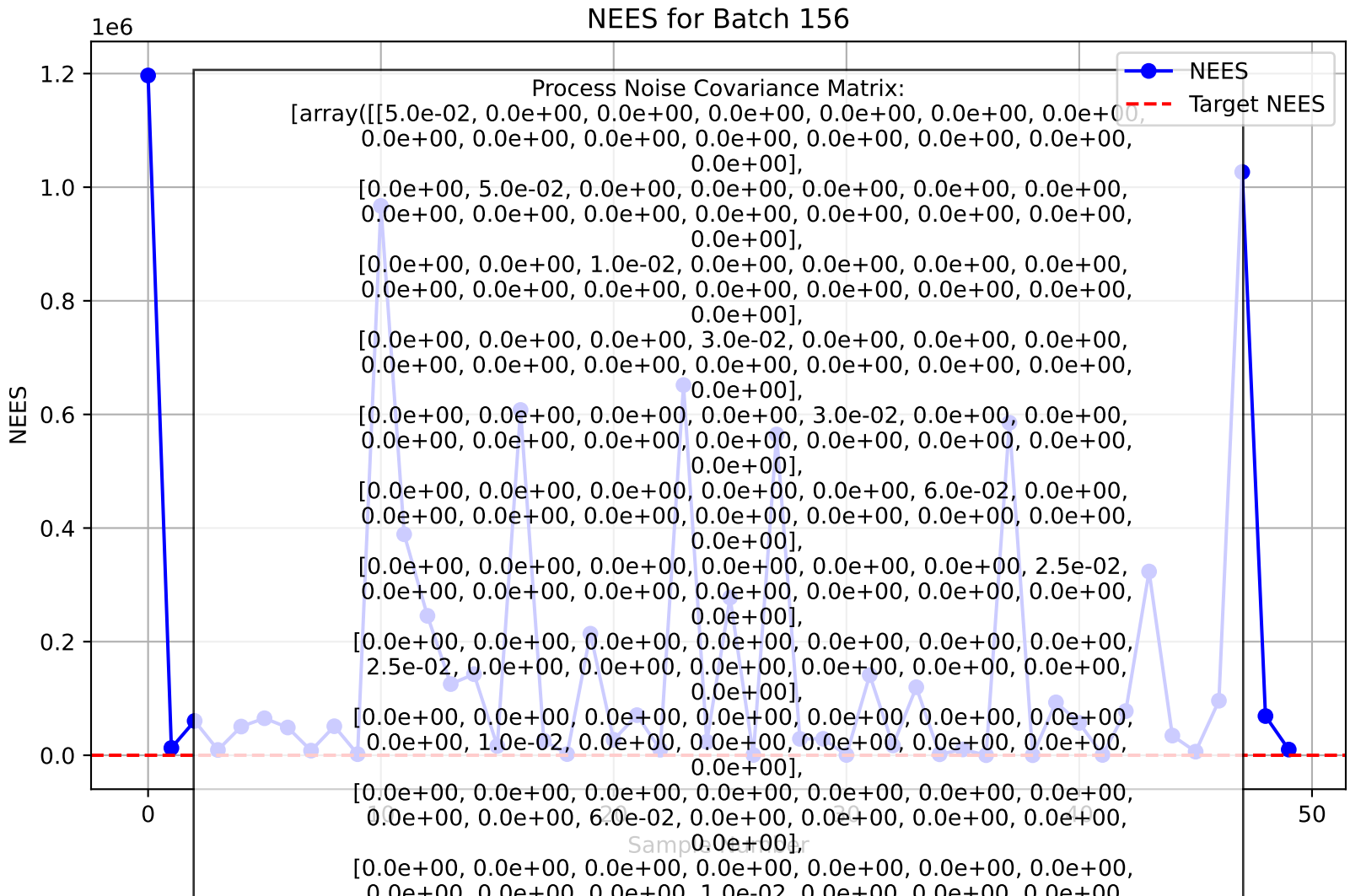

NEES for Batch 151
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Sample Number
0
500
1000
1500
2000
0
10
20
30
40
50

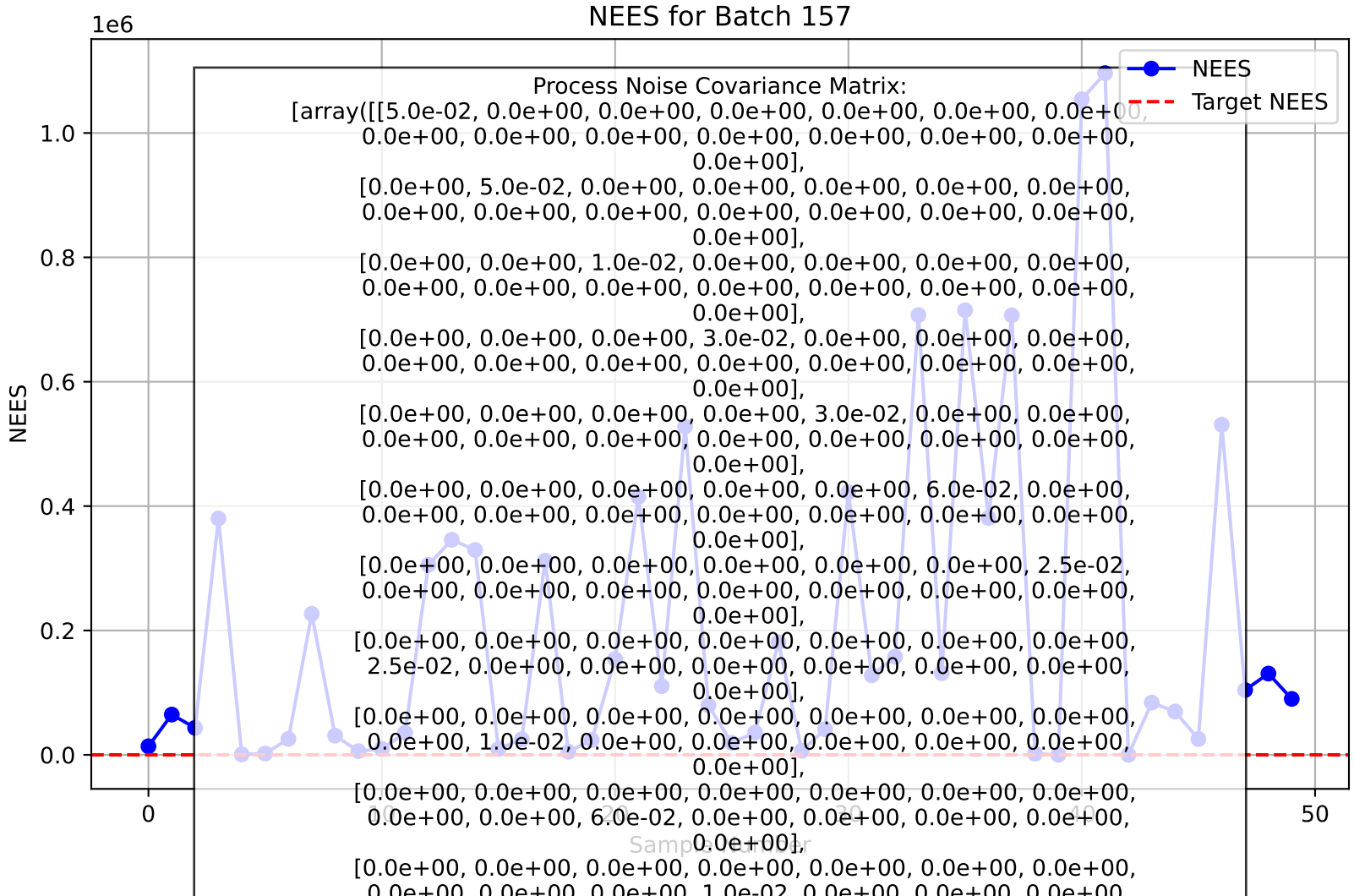

NEES for Batch 152
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
30000
25000
20000
15000
10000
5000
0
0
50
Sample Number

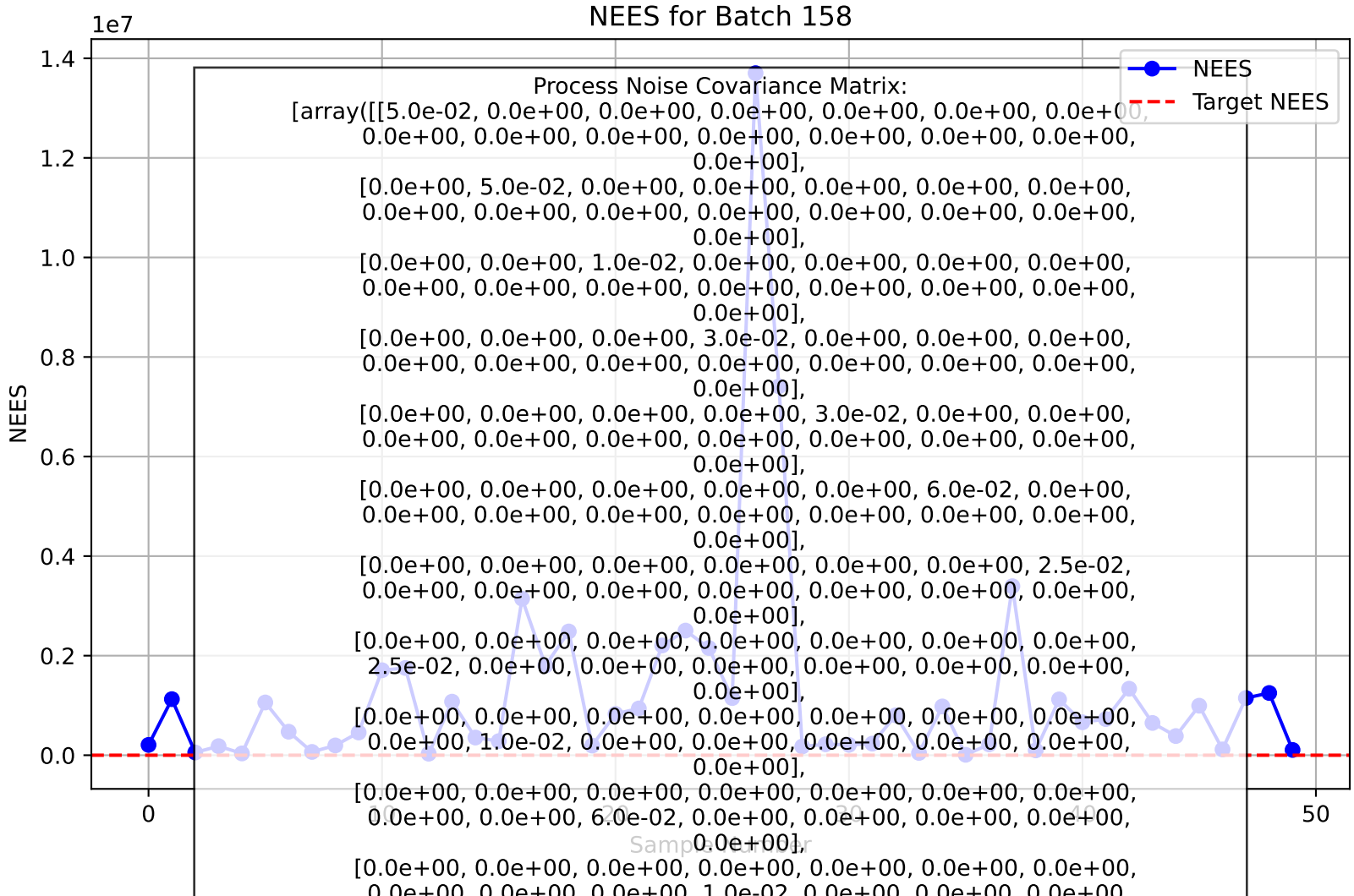

NEES for Batch 153
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
20000
17500
15000
12500
10000
7500
5000
2500
0
0
50

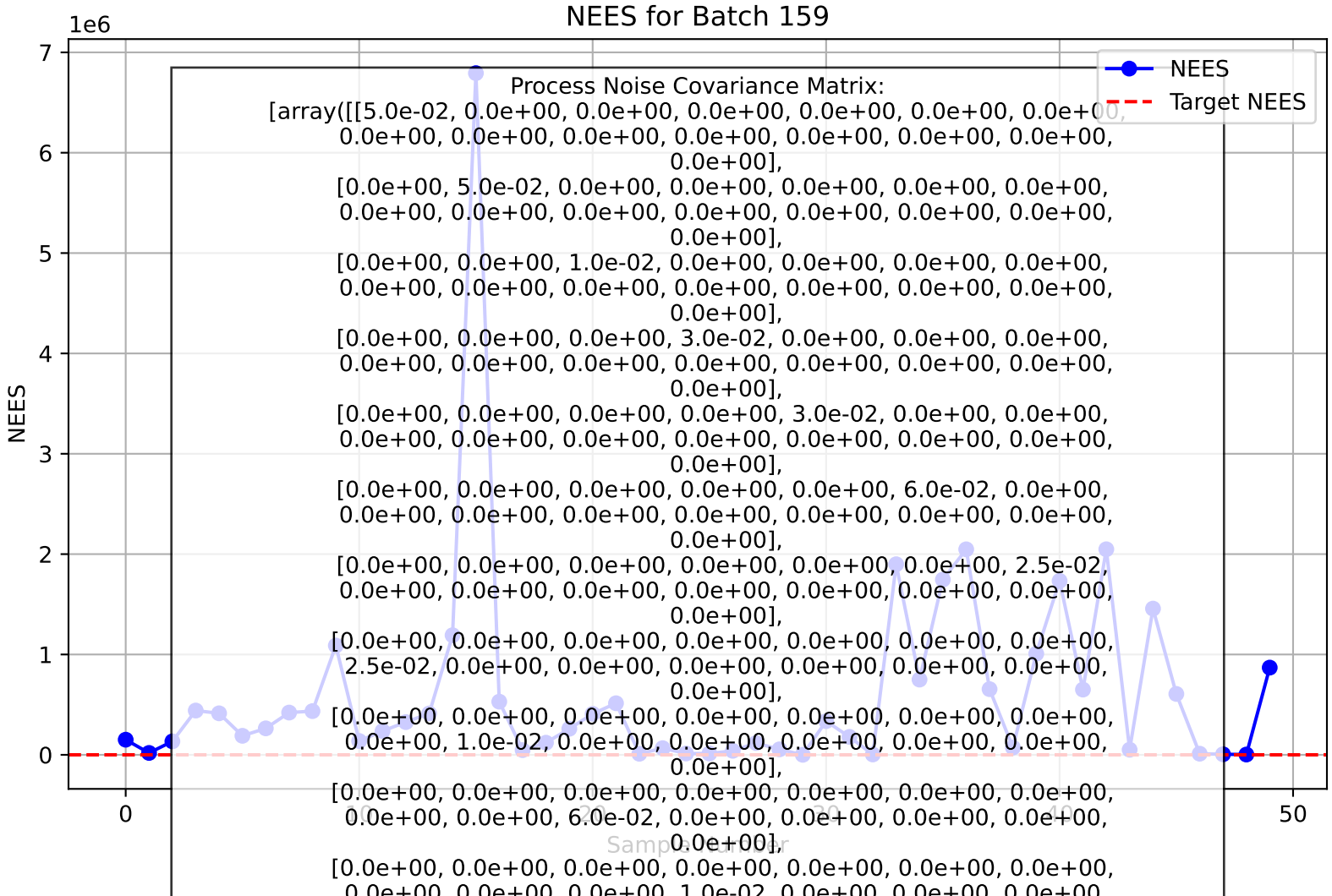

NEES for Batch 154
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
250000
200000
150000
100000
50000
0
0
50

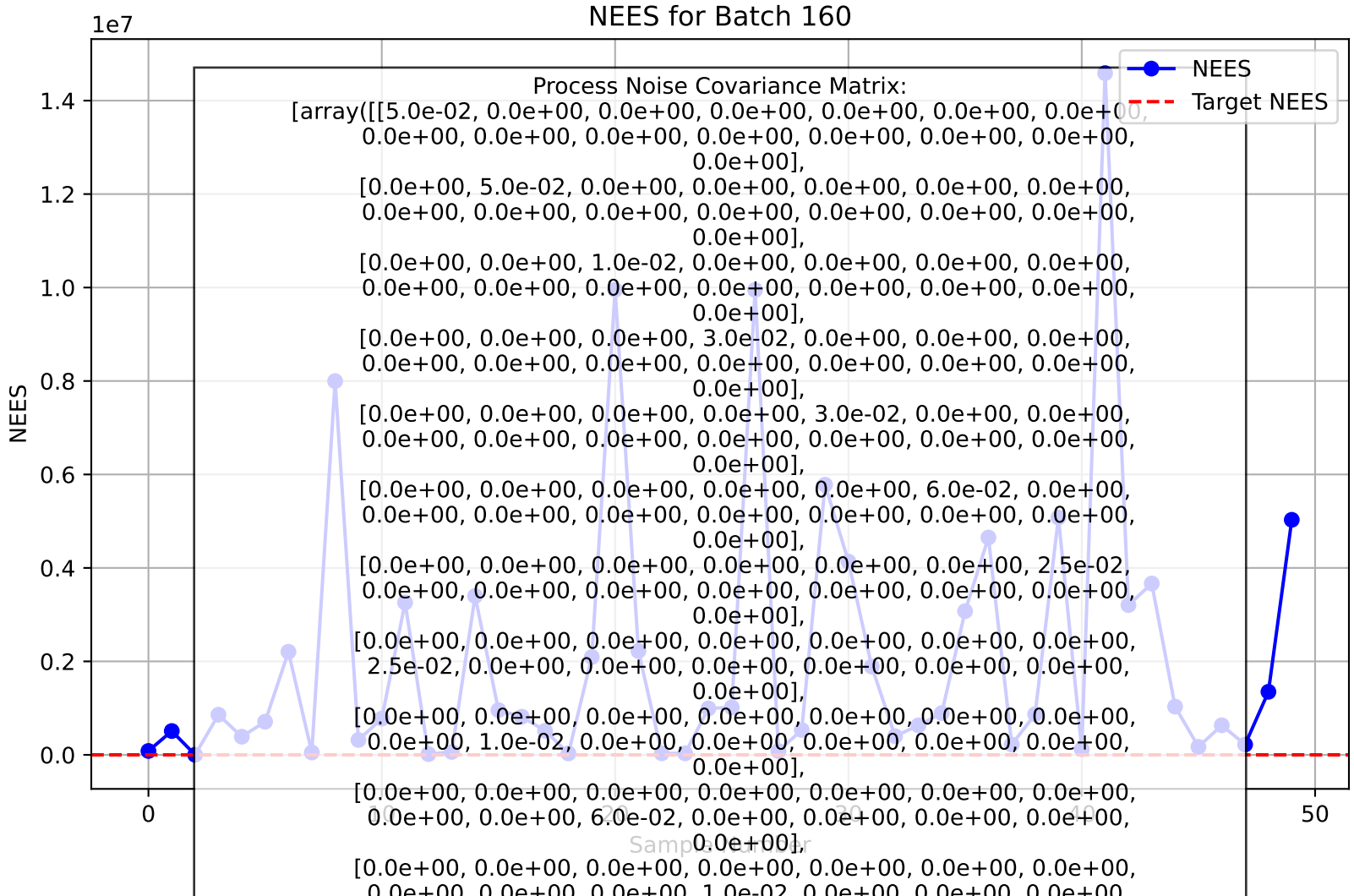

NEES for Batch 155
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
200000
150000
100000
50000
0
0
50
Sample Number

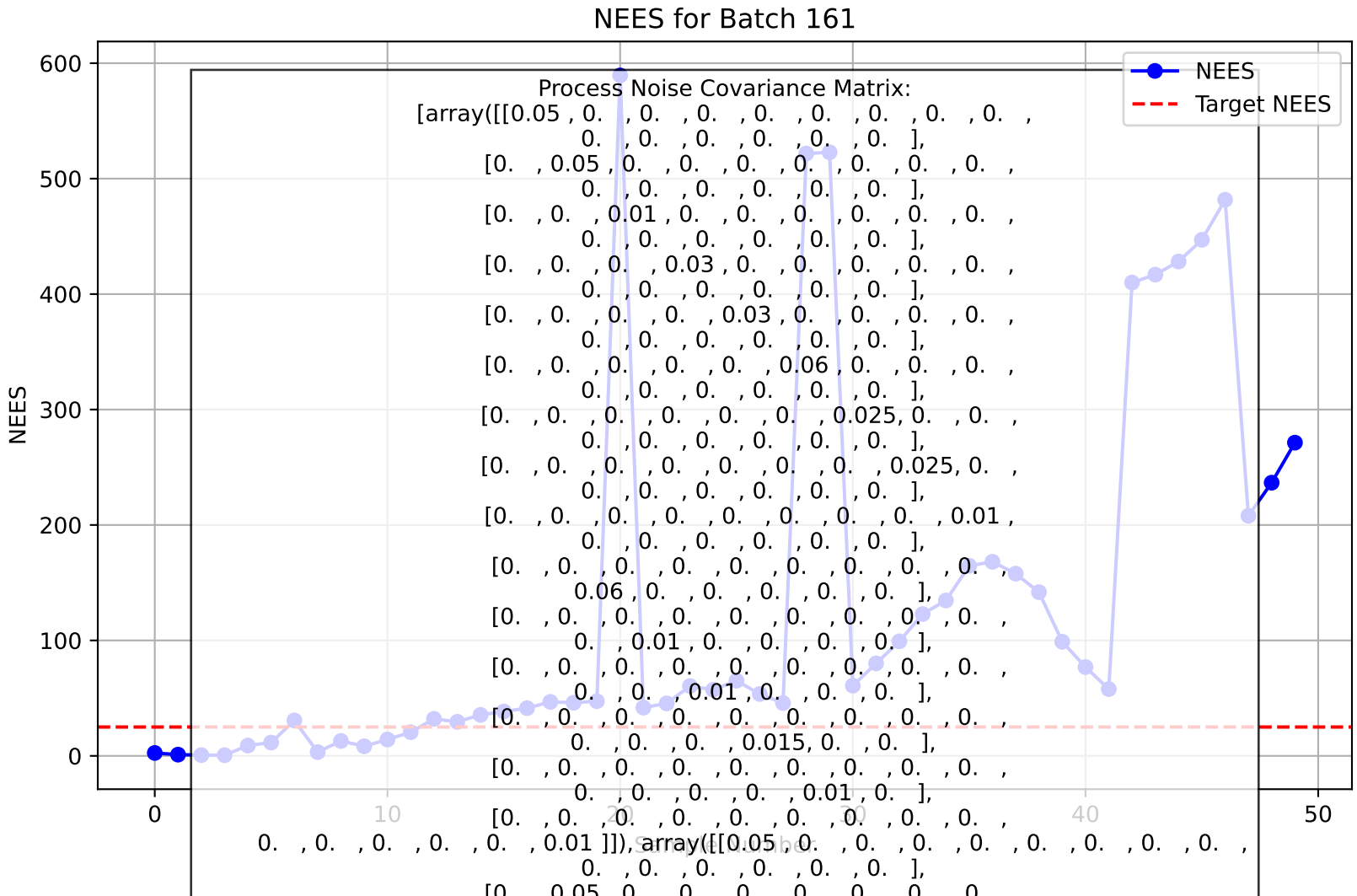

NEES for Batch 156
1e6
NEES
Target NEES
NEES
Sample Number
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

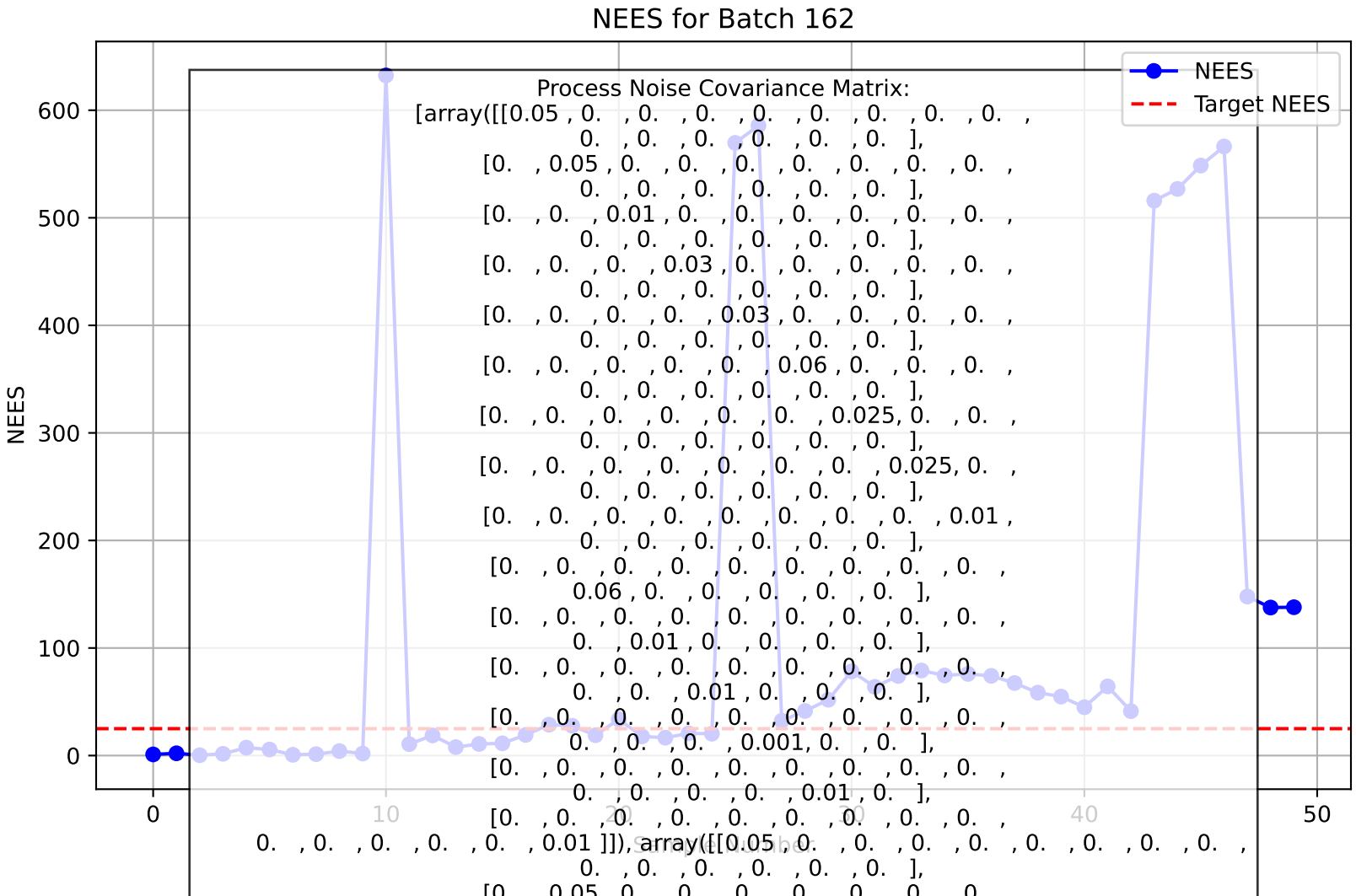

NEES for Batch 157
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
1.0
0.8
0.6
0.4
0.2
0.0
0
50

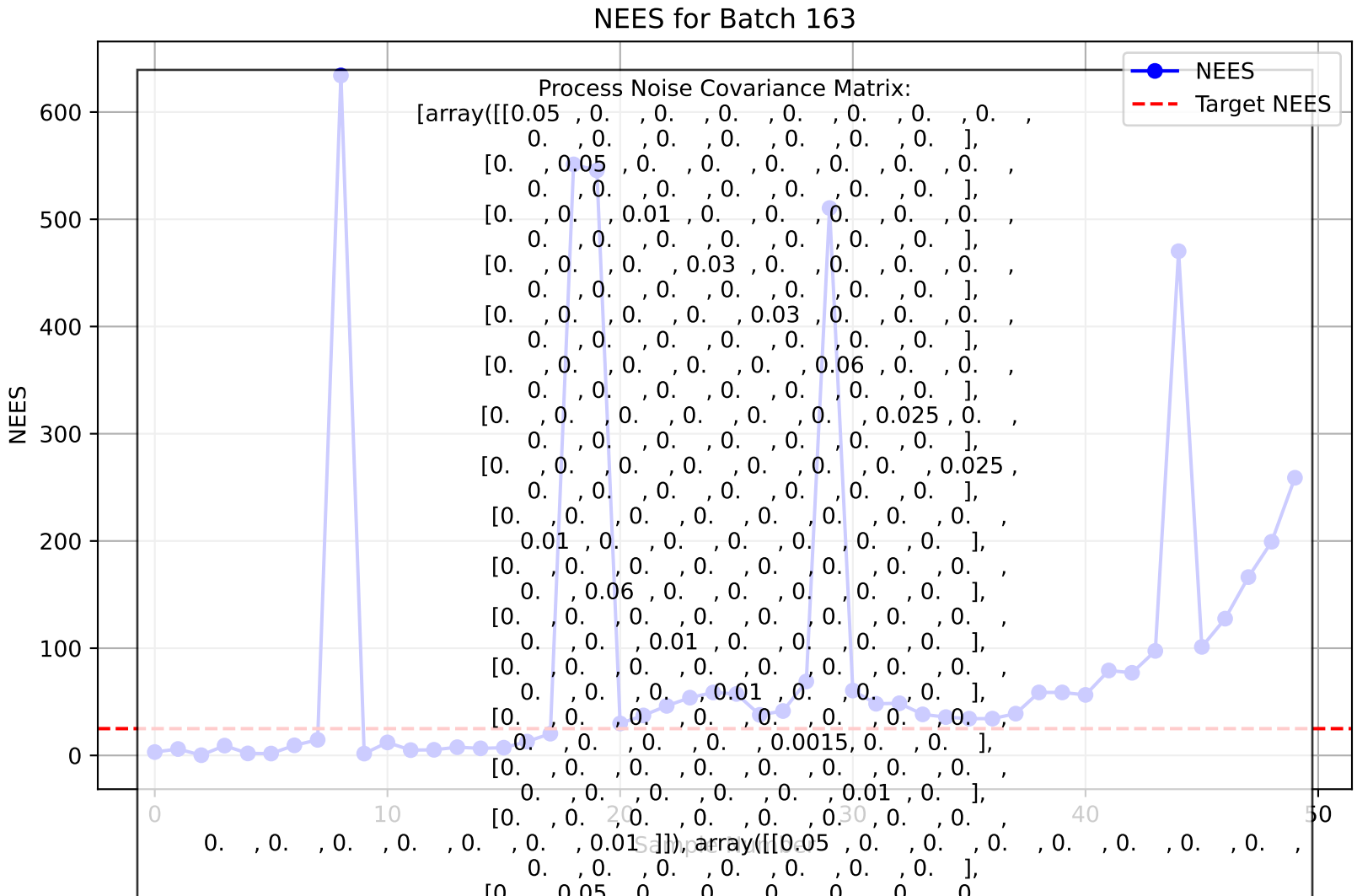

NEES for Batch 158
1e7
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
NEES
0
50
Sample Number
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

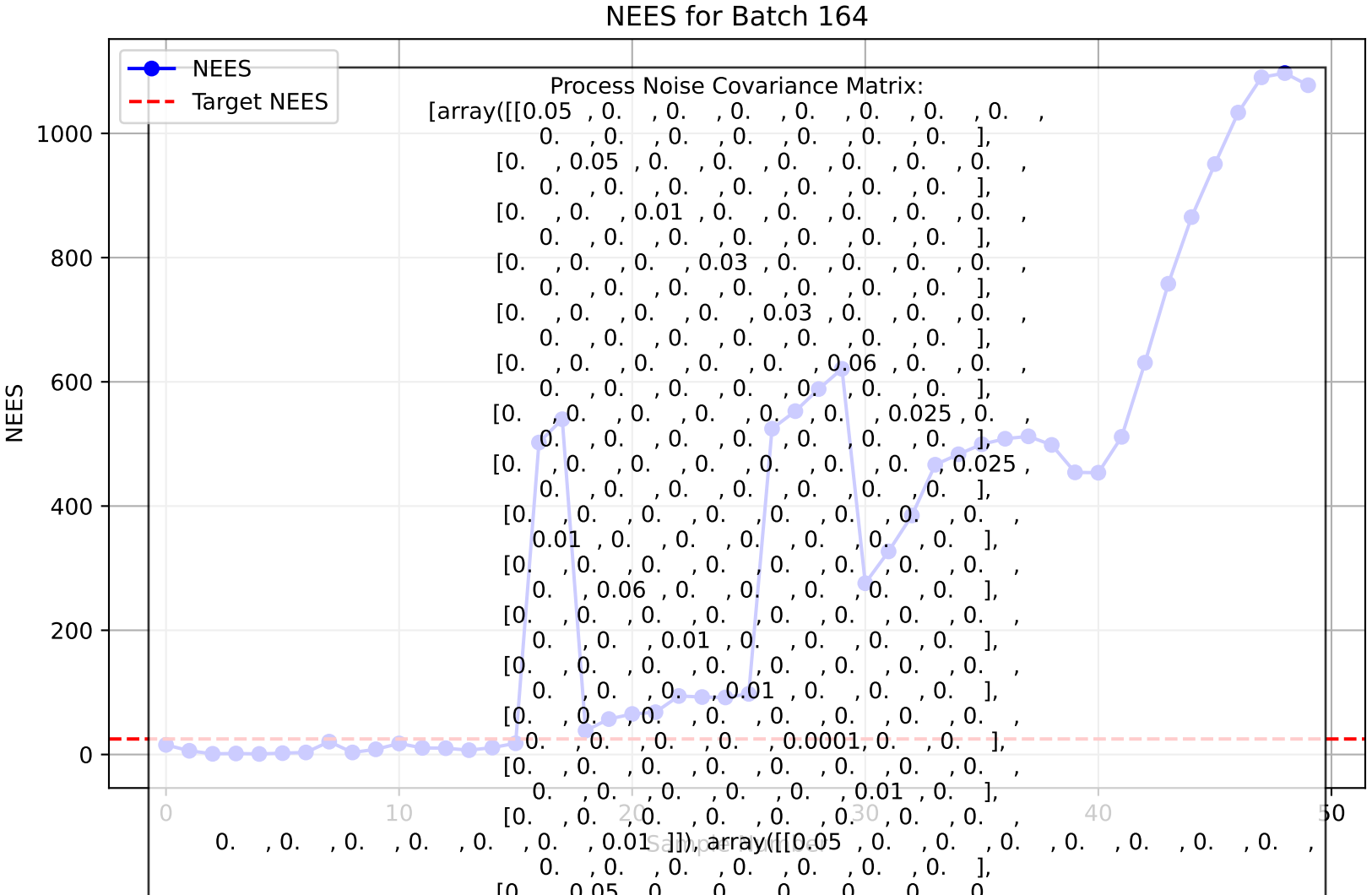

NEES for Batch 159
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50
7
6
5
4
3
2
1
0

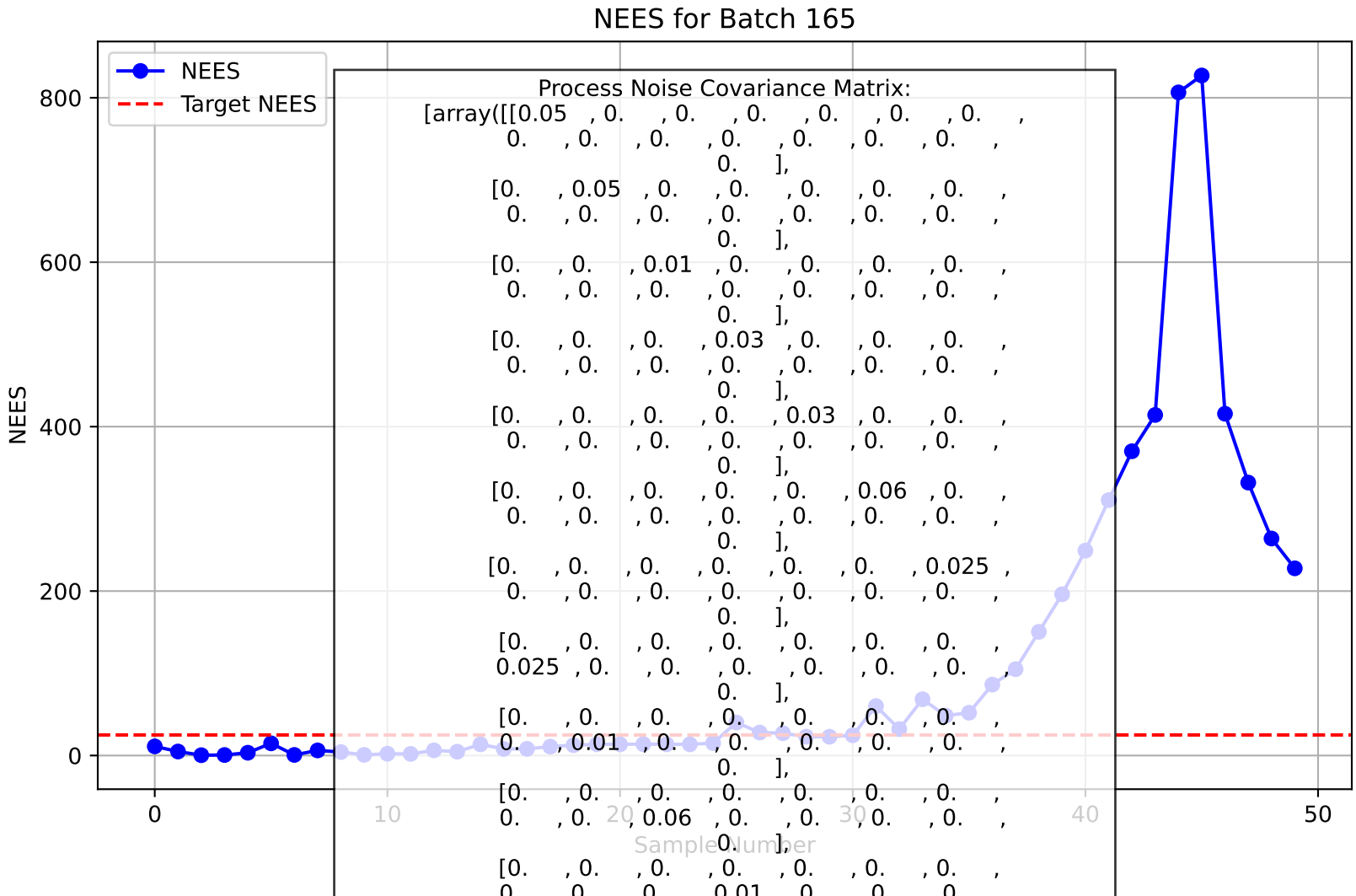

NEES for Batch 160
1e7
NEES
Target NEES
NEES
Sample Number
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
50
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

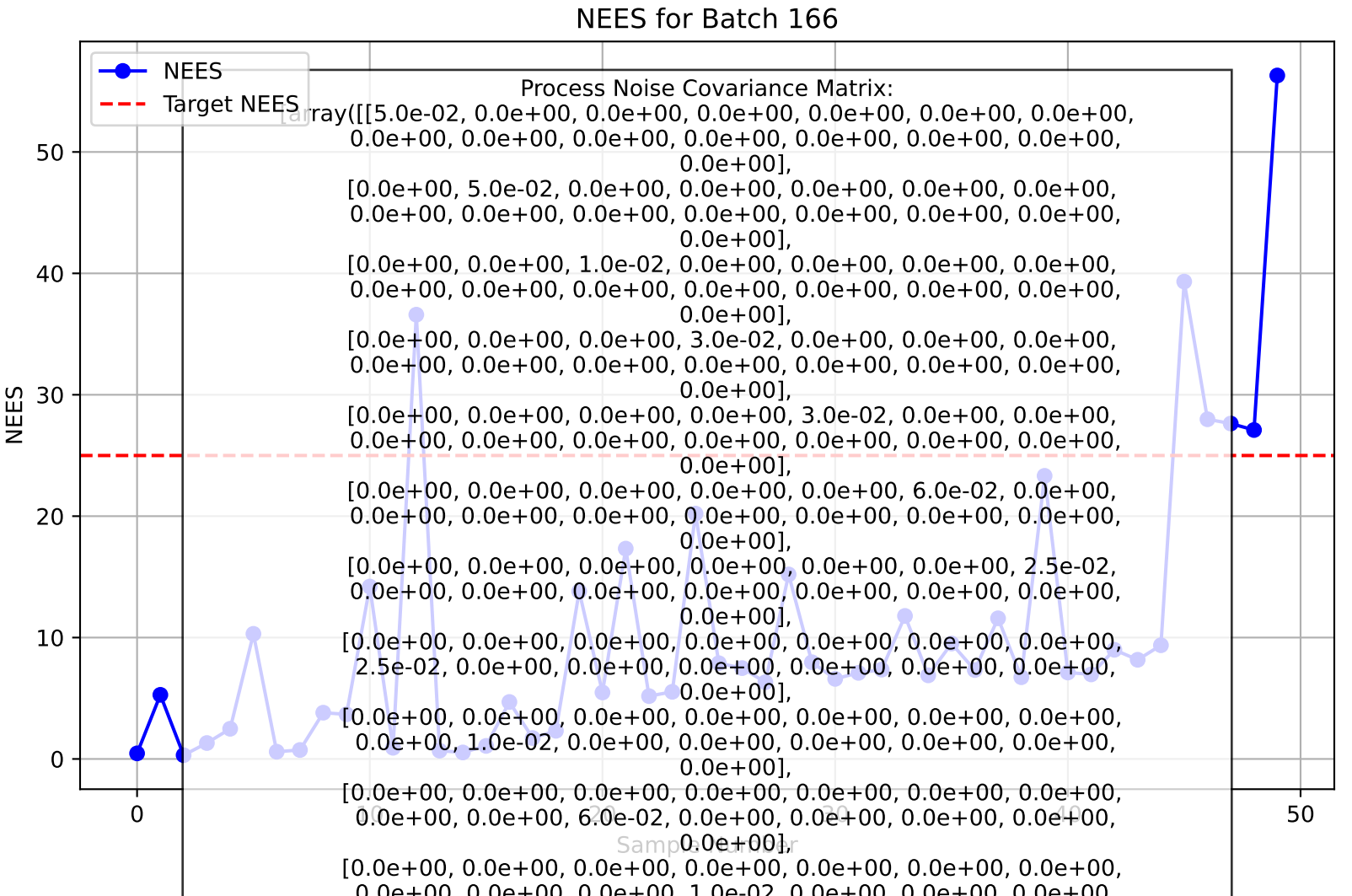

NEES for Batch 161
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.015, 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50

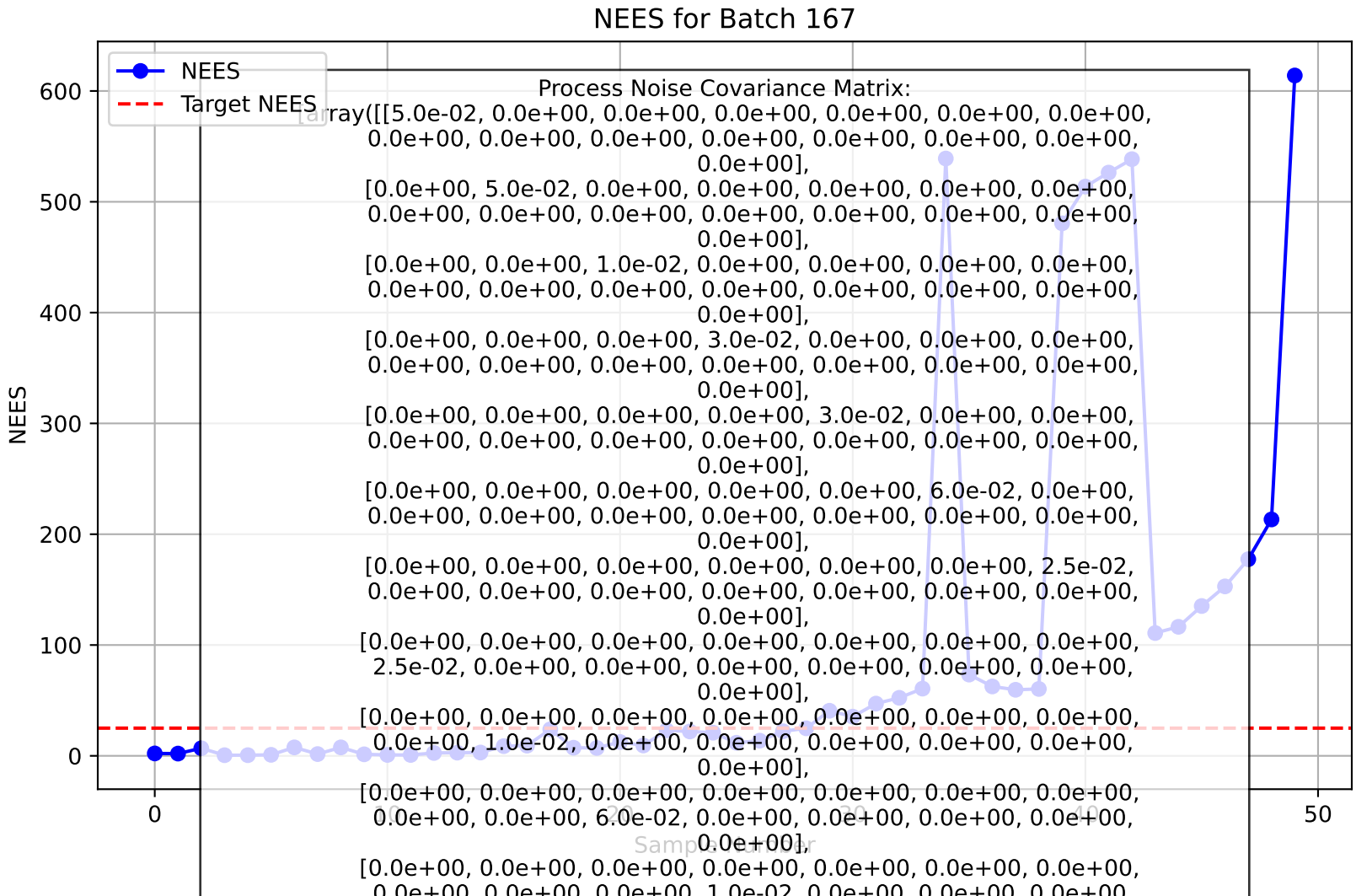

NEES for Batch 162
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.001, 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
0
100
200
300
400
500
600
0
10
20
30
40
50

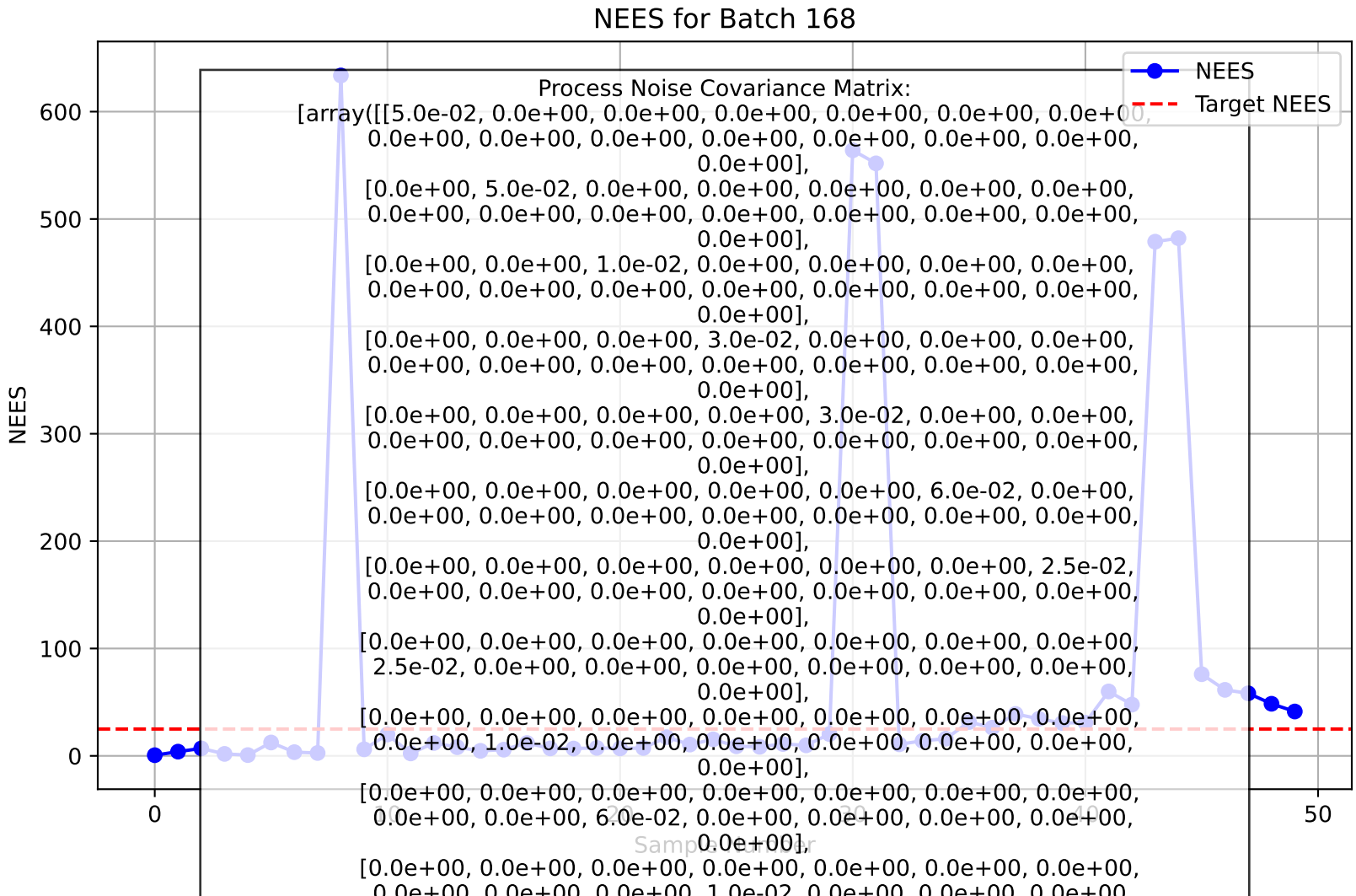

NEES for Batch 163
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.0015, 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
Sample Index
600
500
400
300
200
100
0
0
10
20
30
40
50

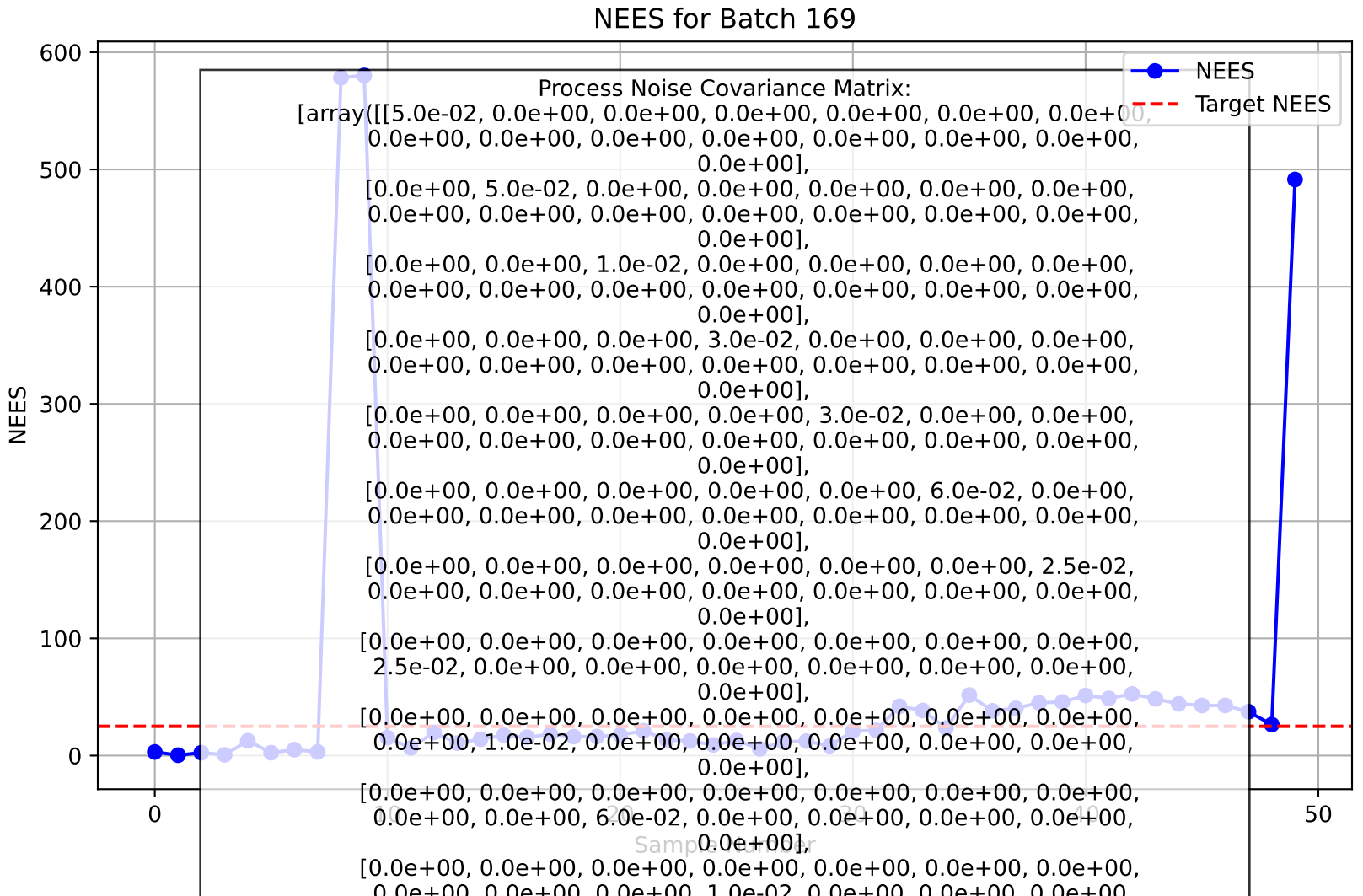

NEES for Batch 164
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.0001, 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
1000
800
600
400
200
0
0
10
20
30
40
50
Sample Index

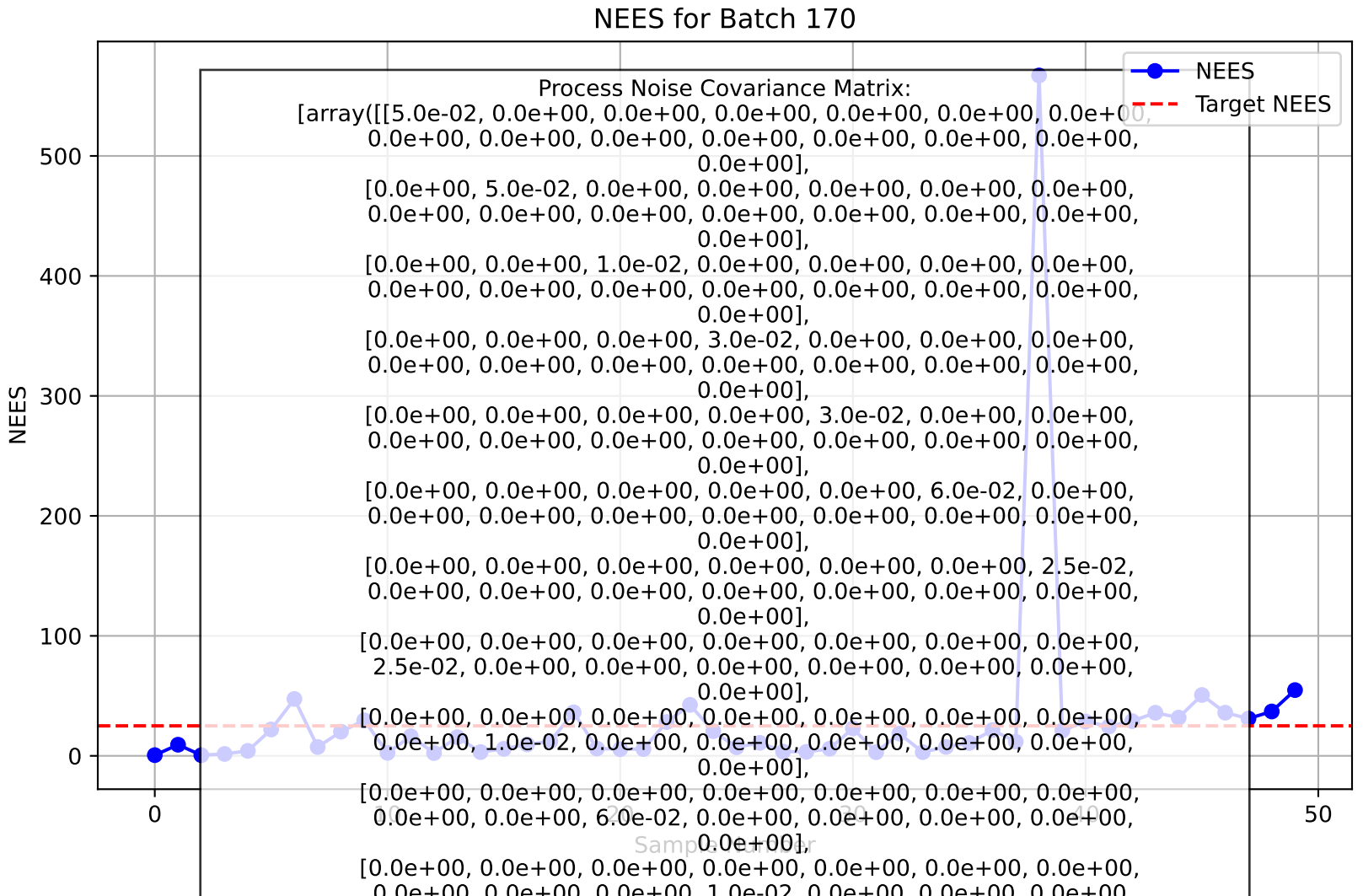

NEES for Batch 165
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Sample Number
0
200
400
600
800
0
10
20
30
40
50

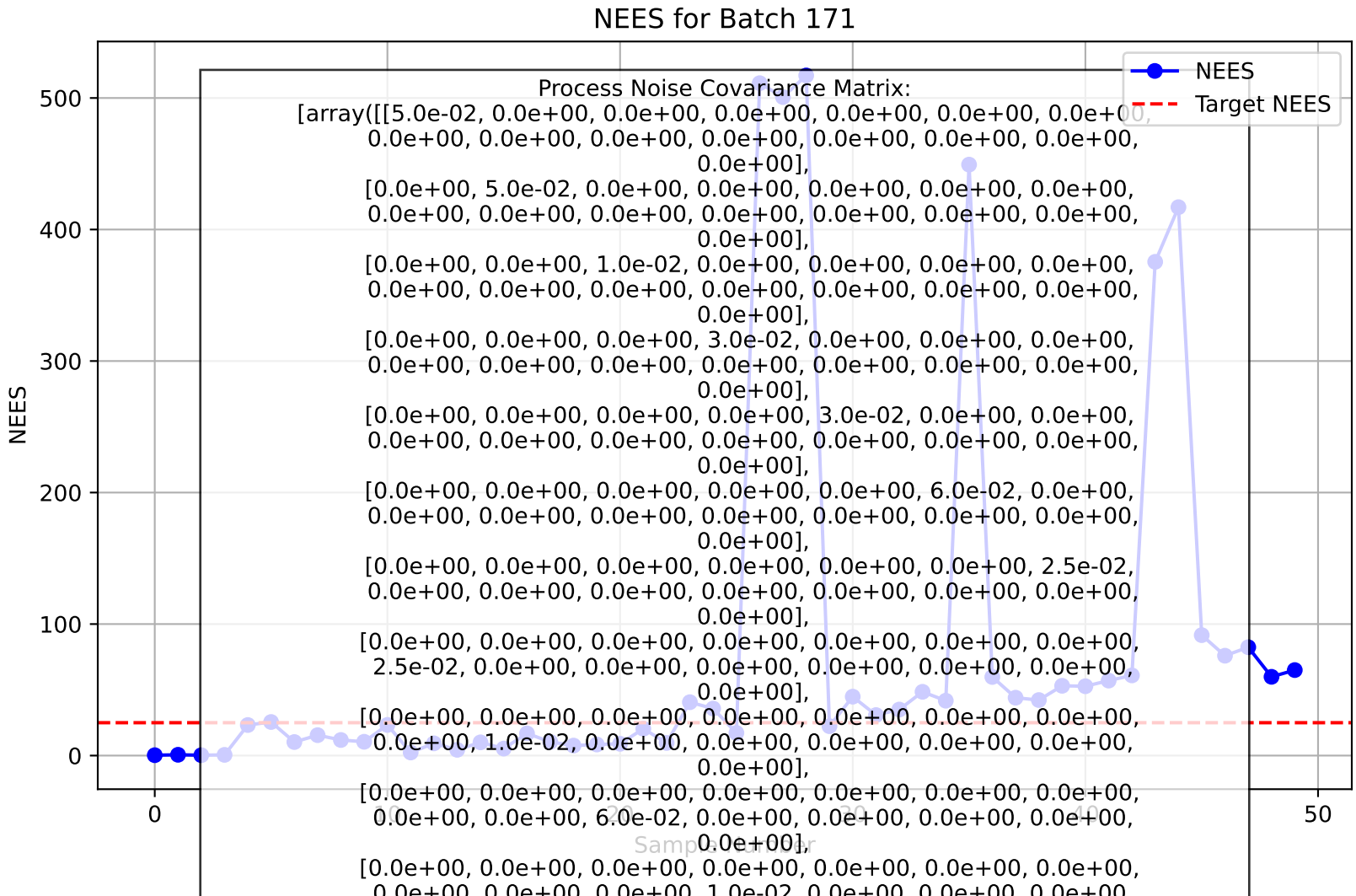

NEES for Batch 166
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
10
20
30
40
50

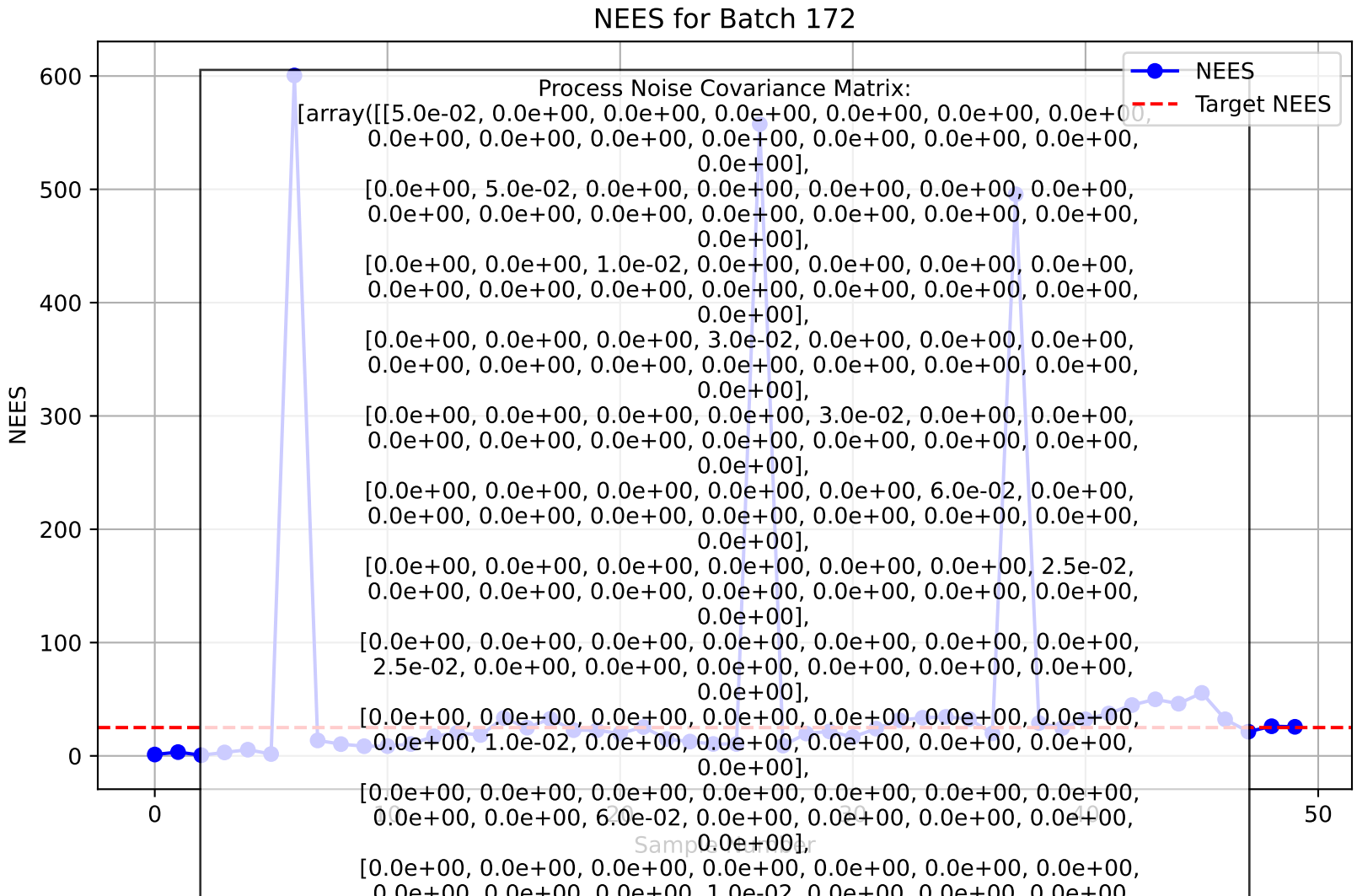

NEES for Batch 167
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50
100
200
300
400
500
600

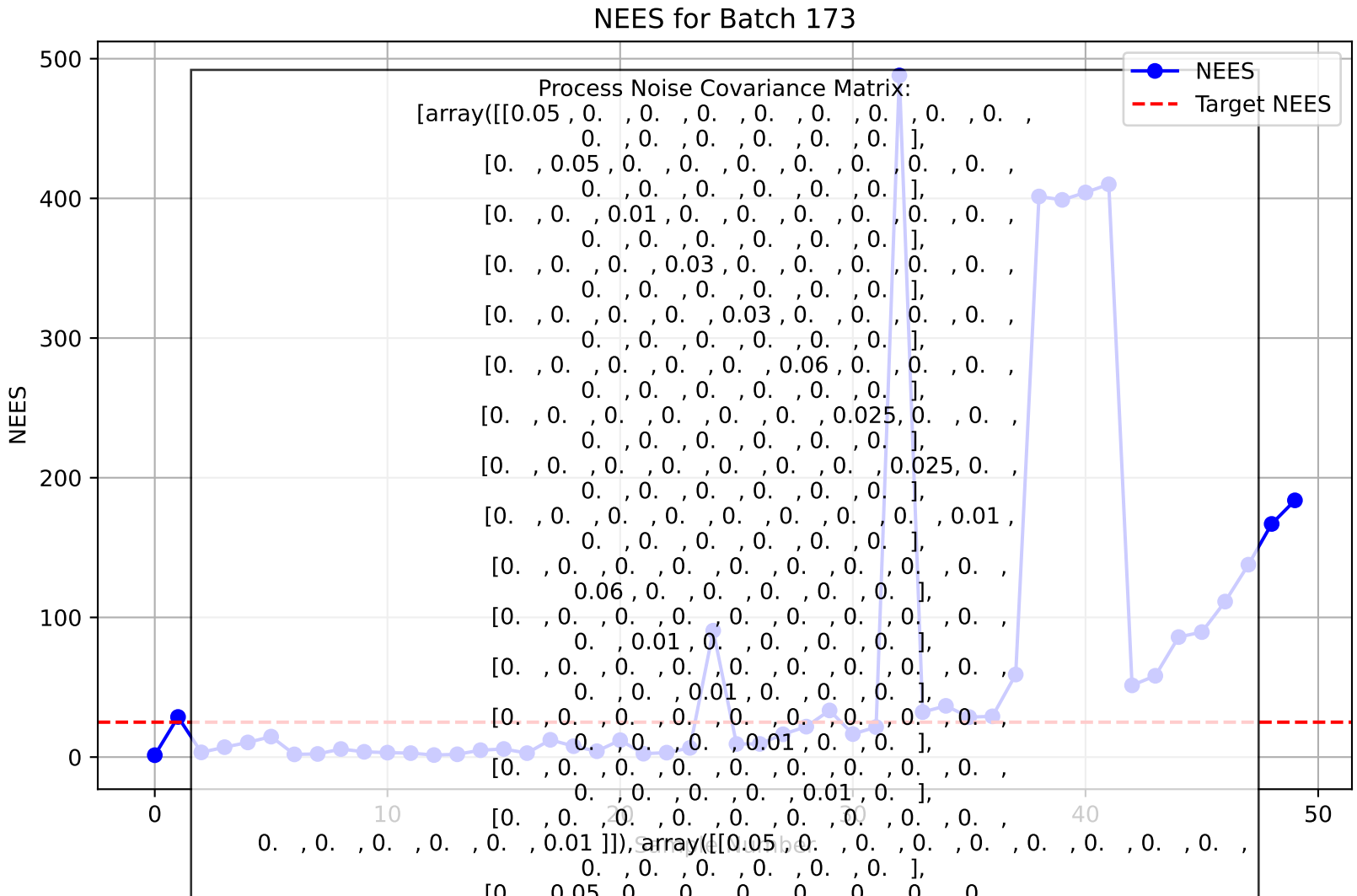

NEES for Batch 168
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

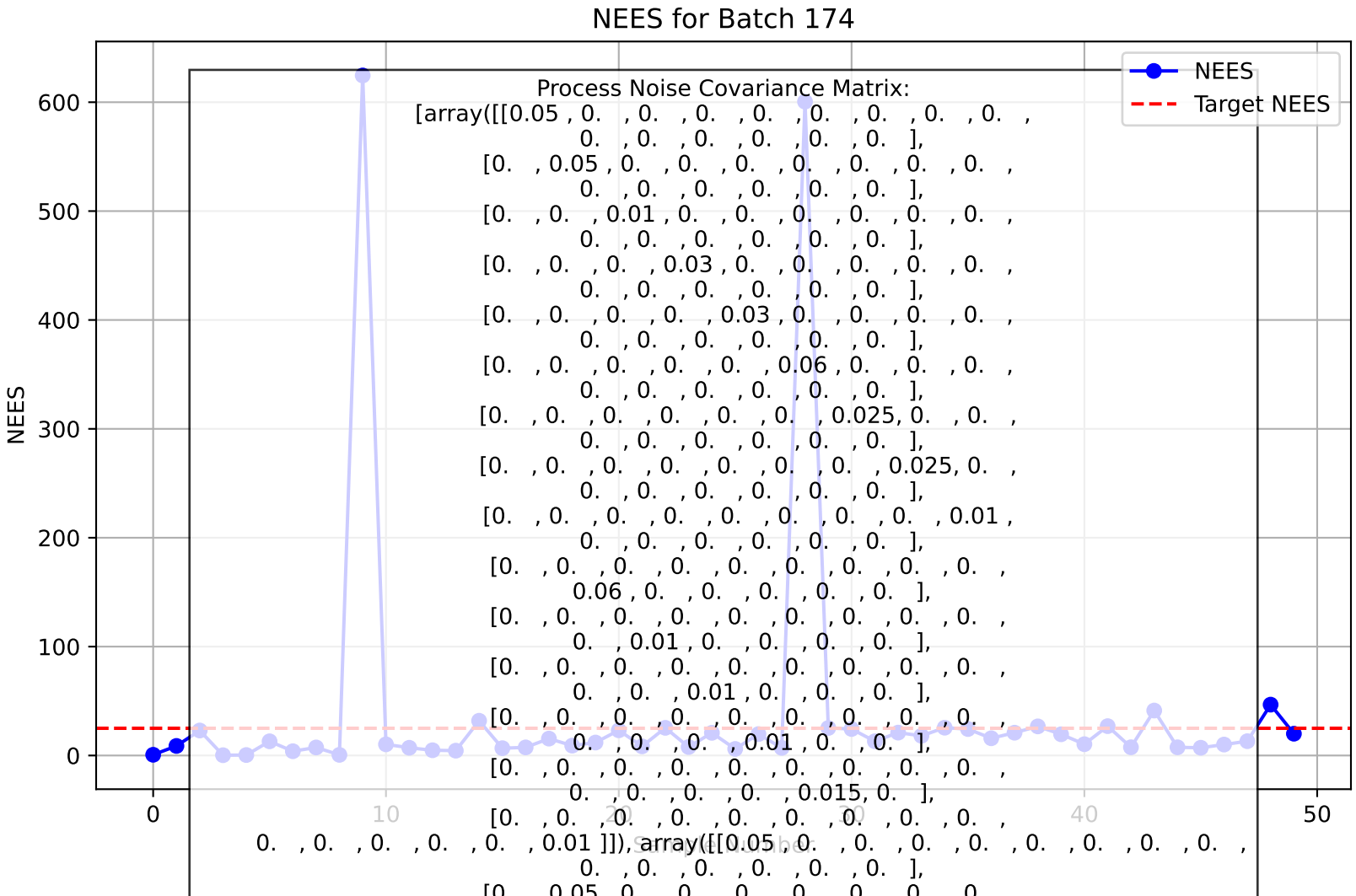

NEES for Batch 169
NEES
Target NEES
NEES
Sample Number
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

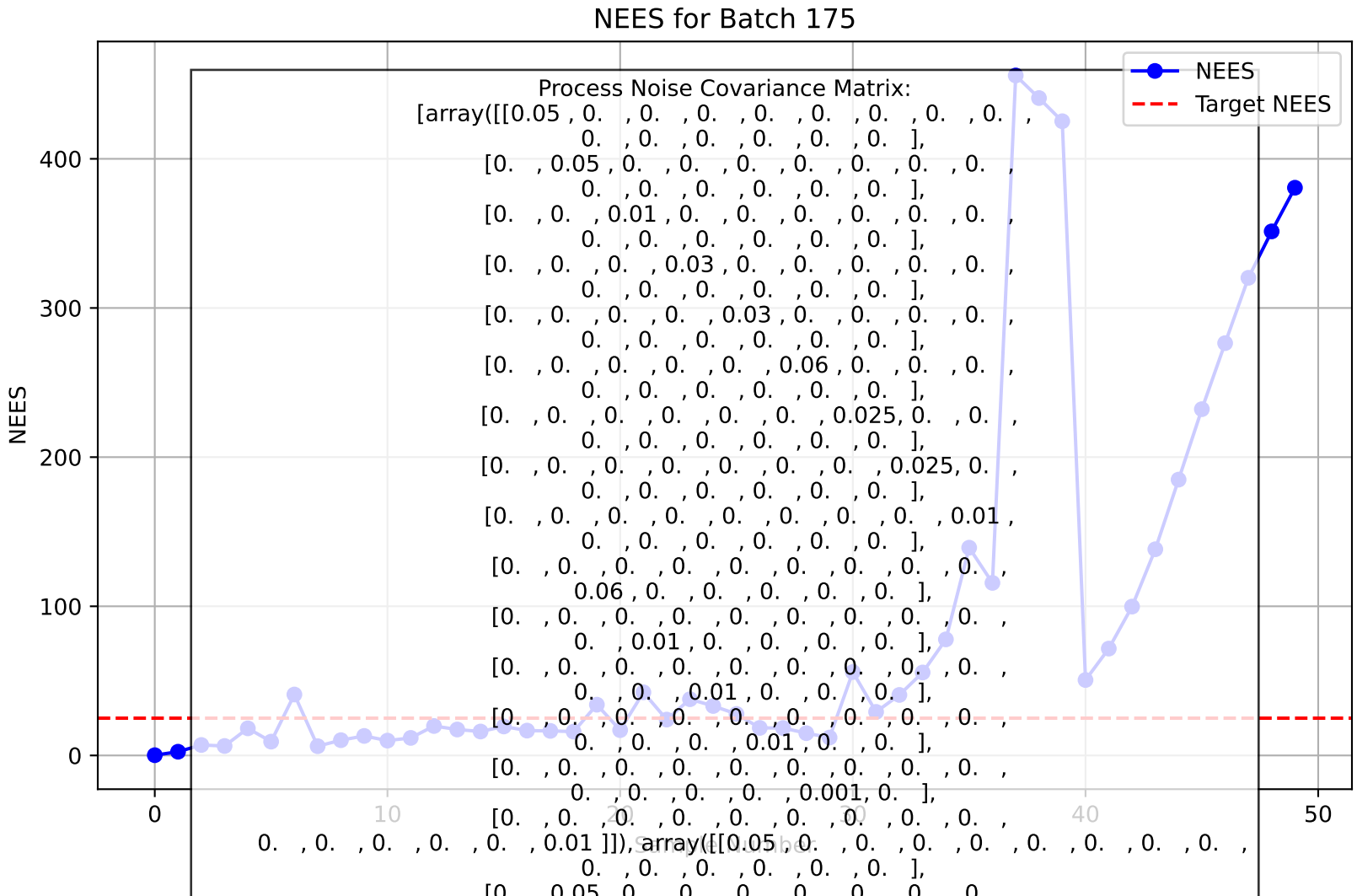

NEES for Batch 170
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50

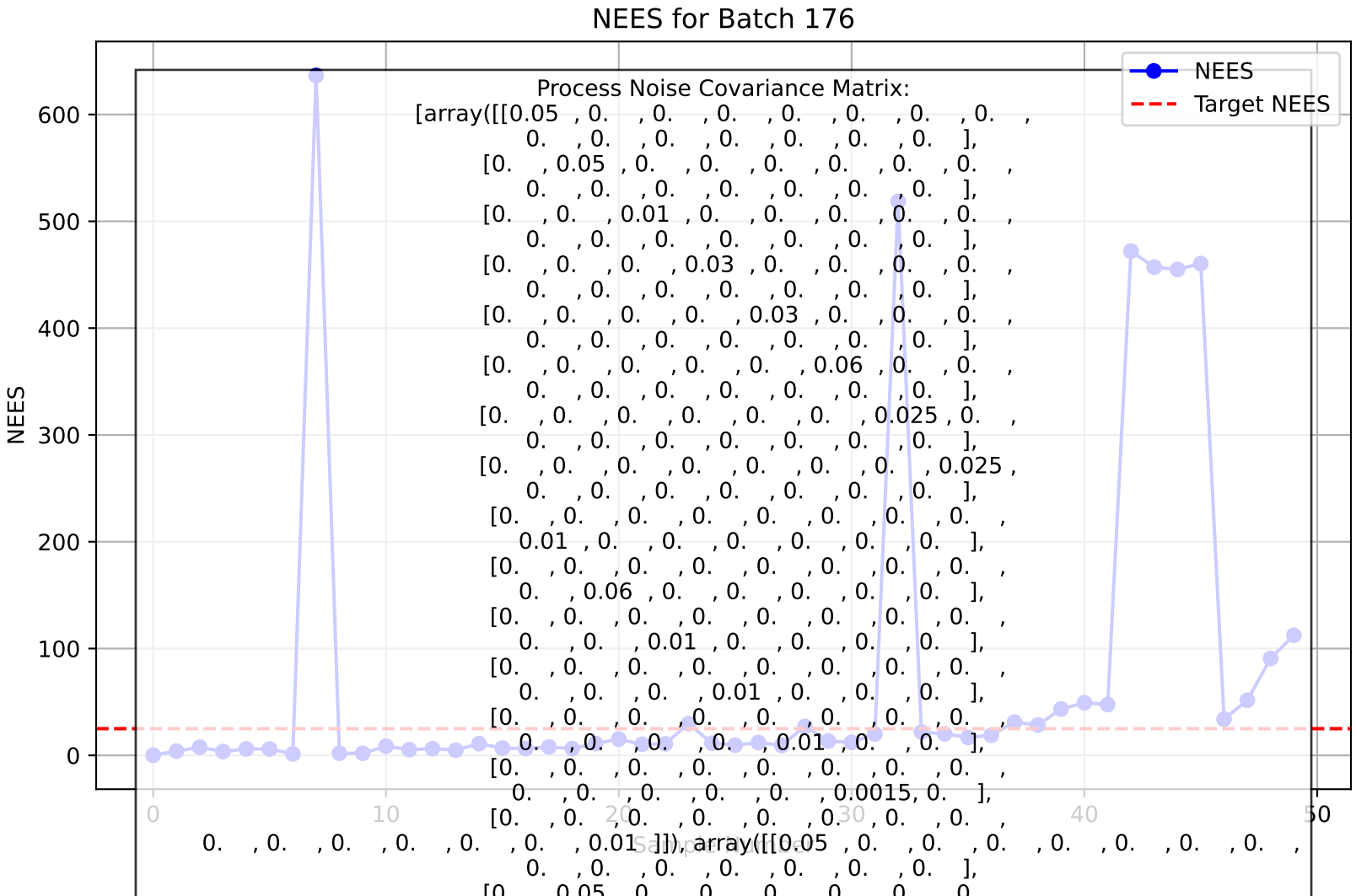

NEES for Batch 171
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50

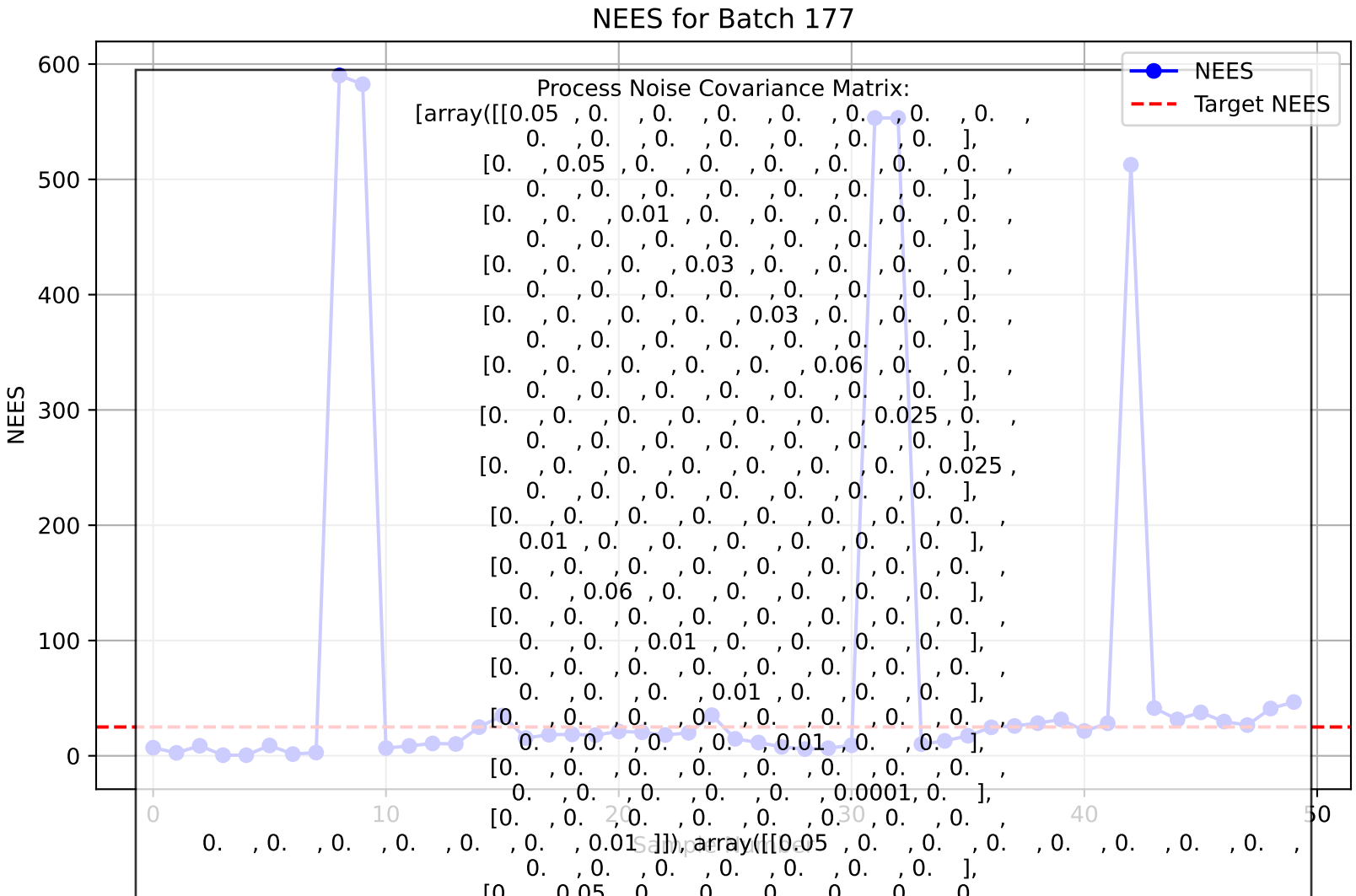

NEES for Batch 172
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

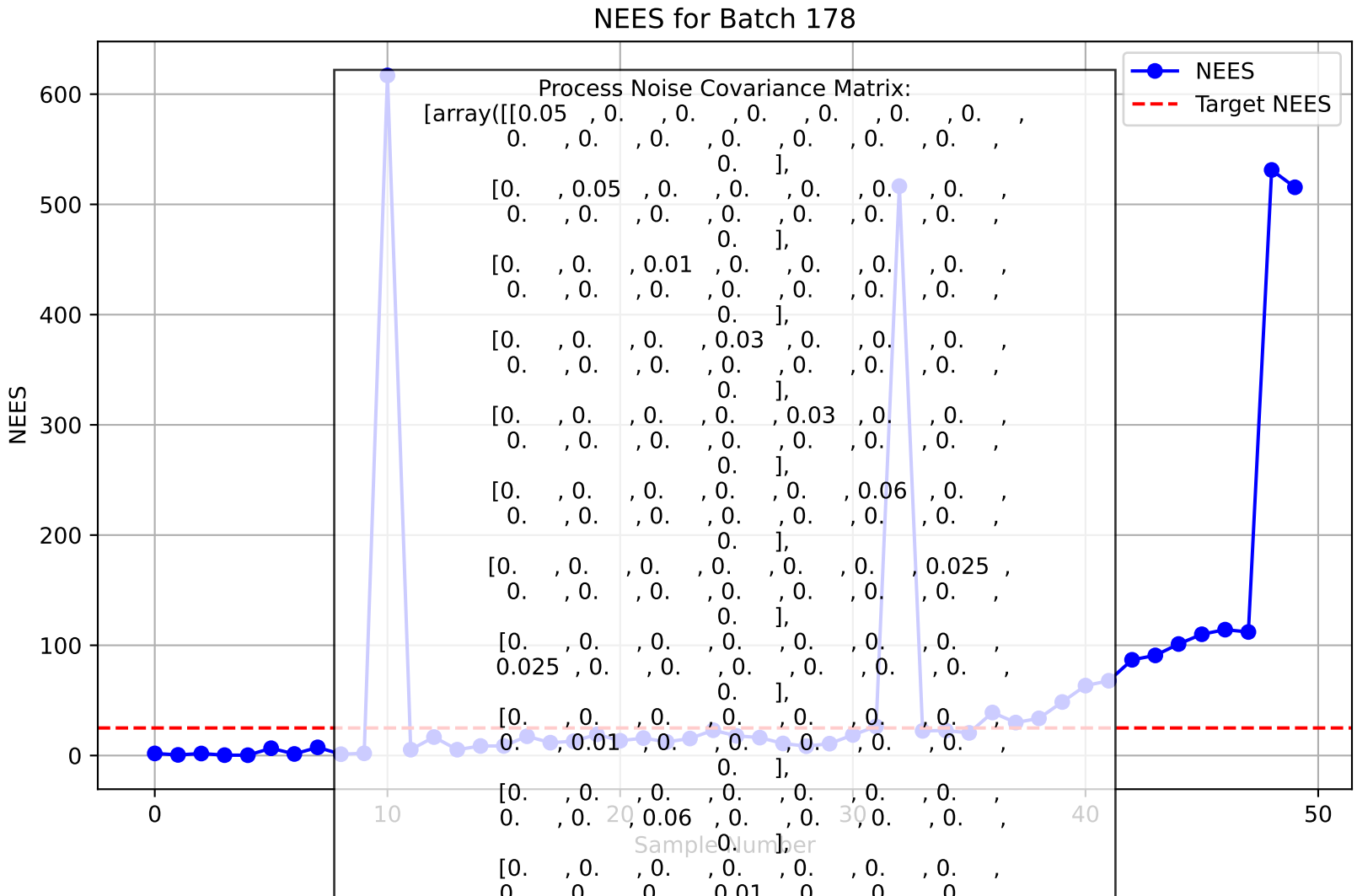

NEES for Batch 173
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
500
400
300
200
100
0
0
10
20
30
40
50
Sample Number

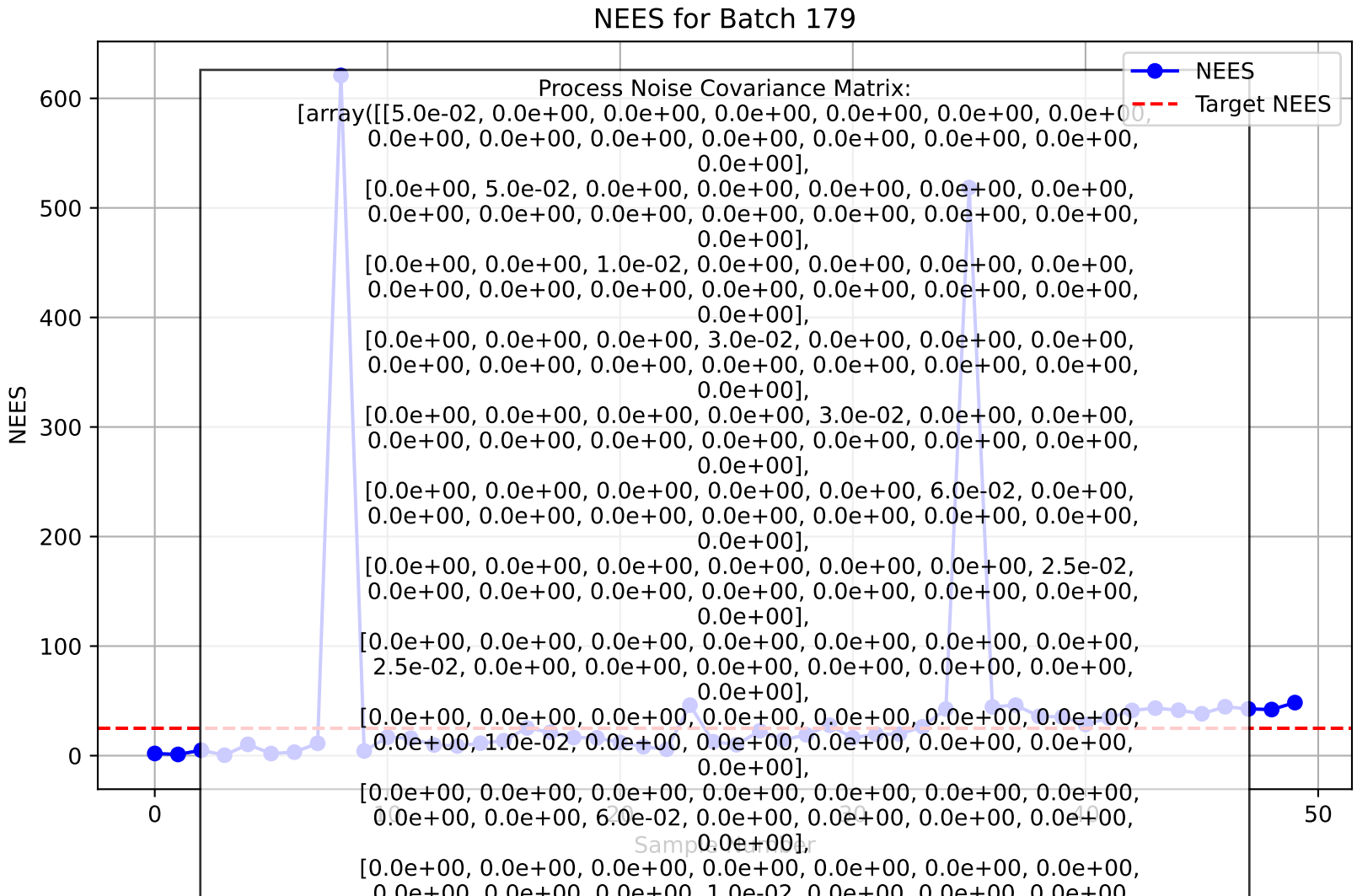

NEES for Batch 174
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.015, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
600
500
400
300
200
100
0
0
10
20
30
40
50

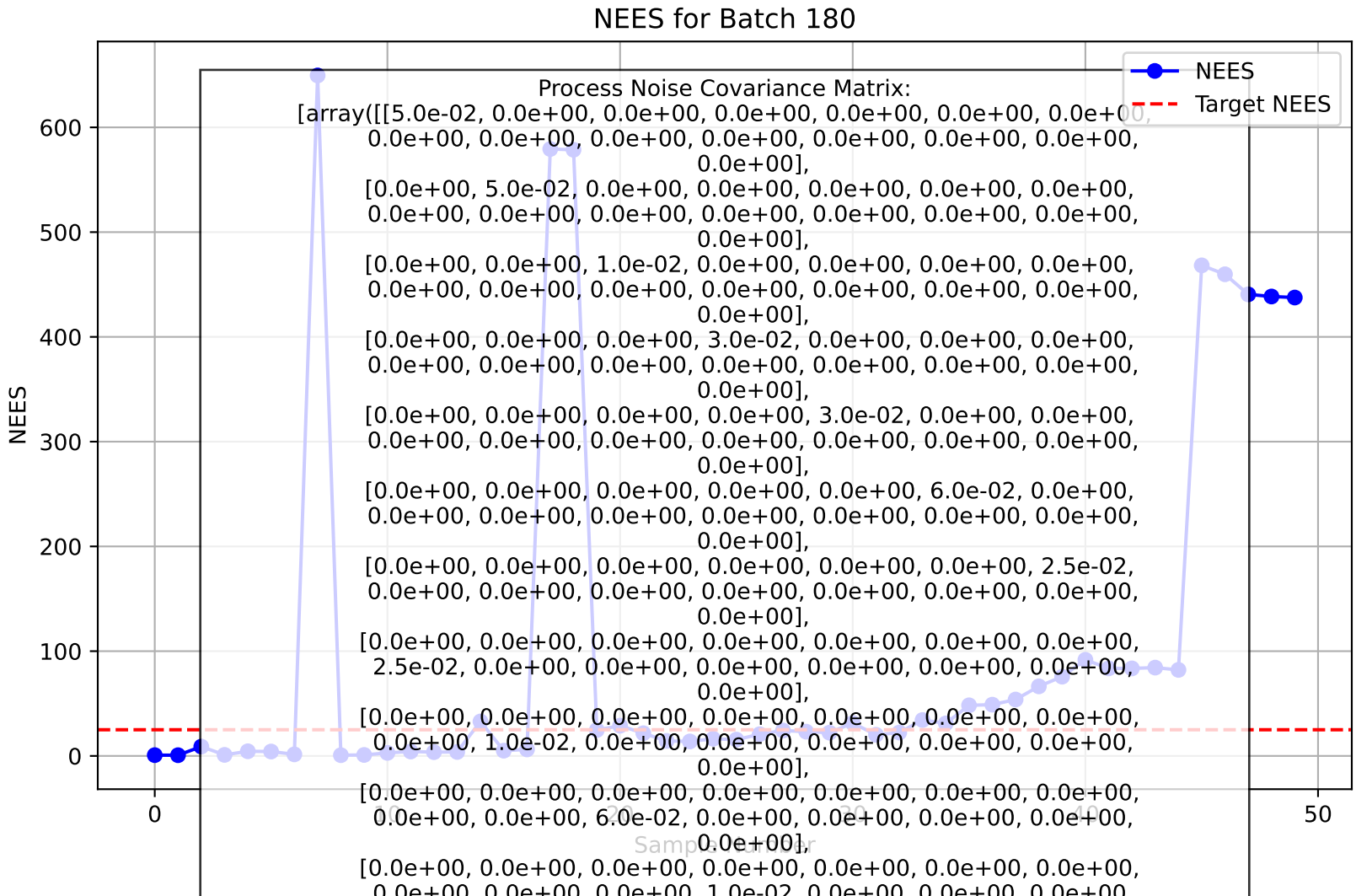

NEES for Batch 175
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.001, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
0
10
20
30
40
50

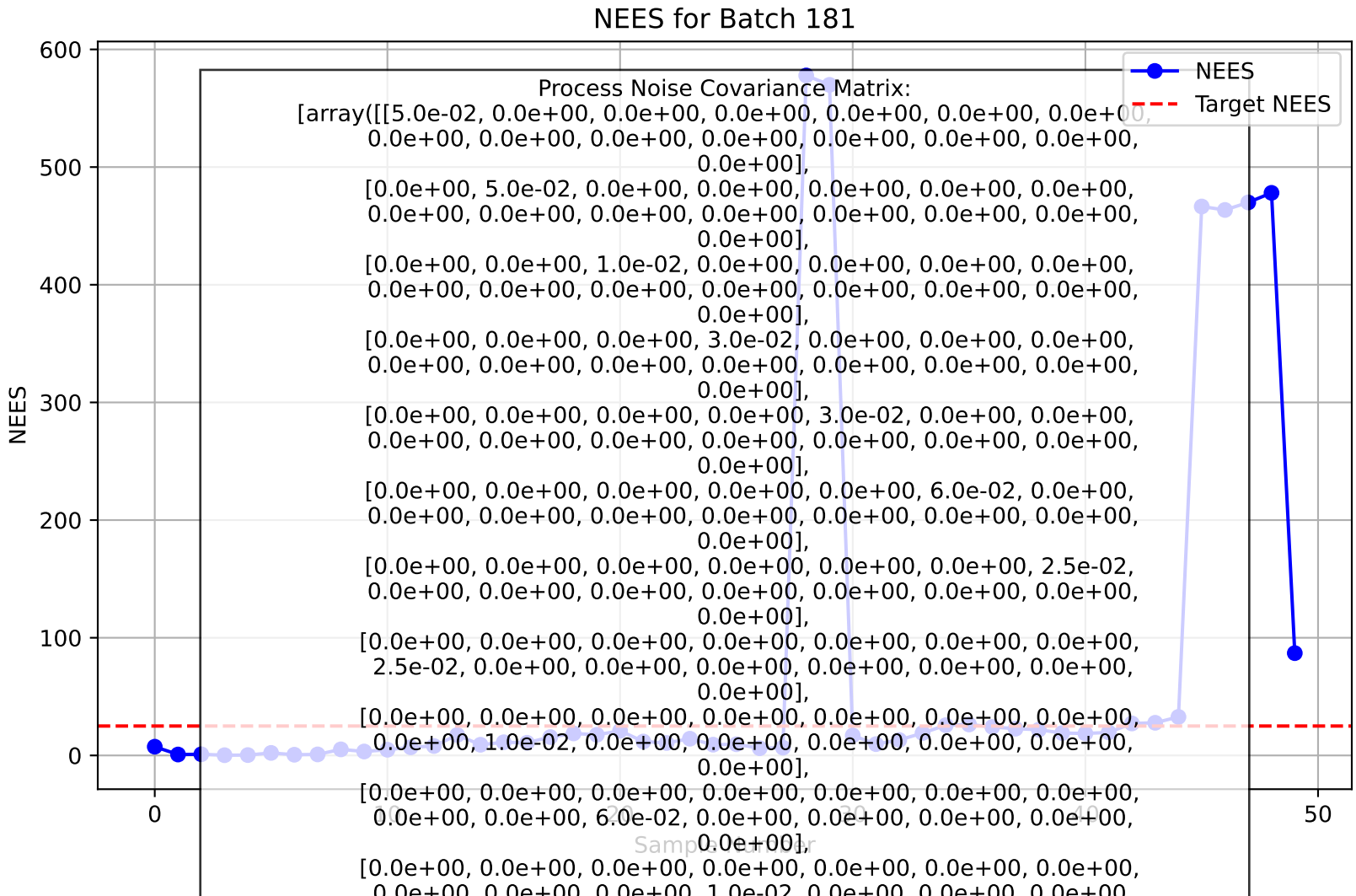

NEES for Batch 176
NEES
Target NEES
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.0015, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,

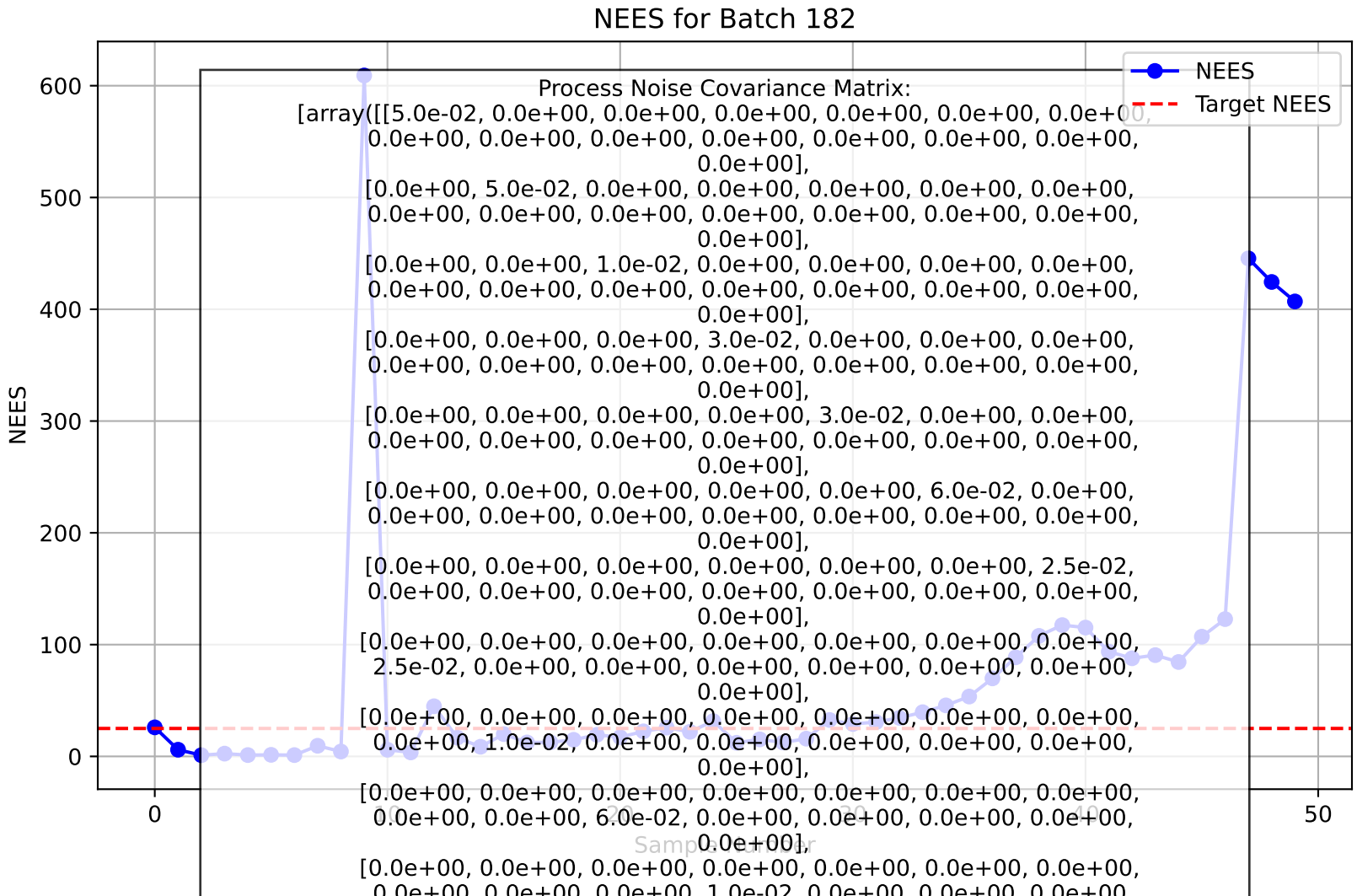

NEES for Batch 177
NEES
Target NEES
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.0001, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.

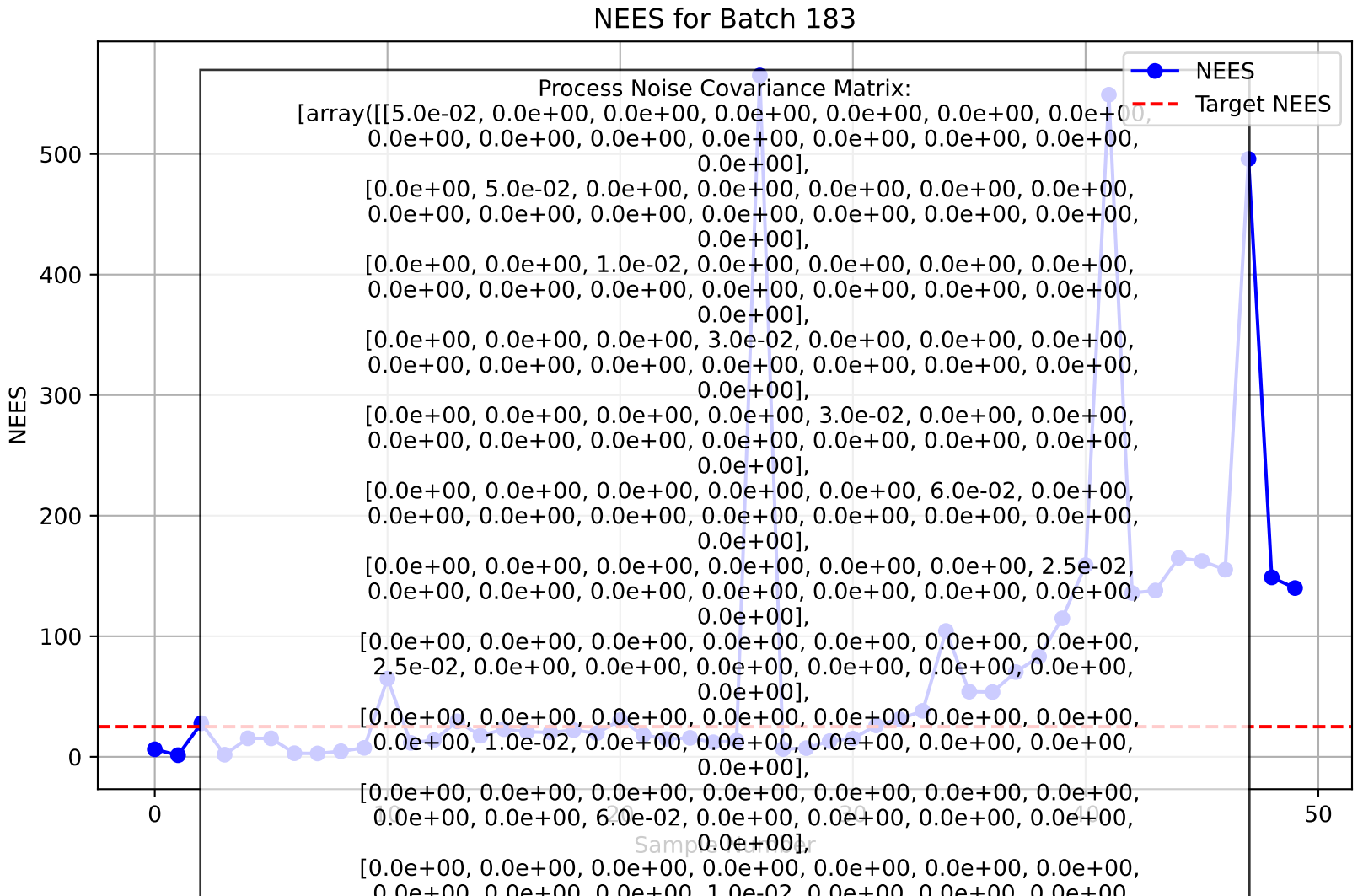

NEES for Batch 178
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50

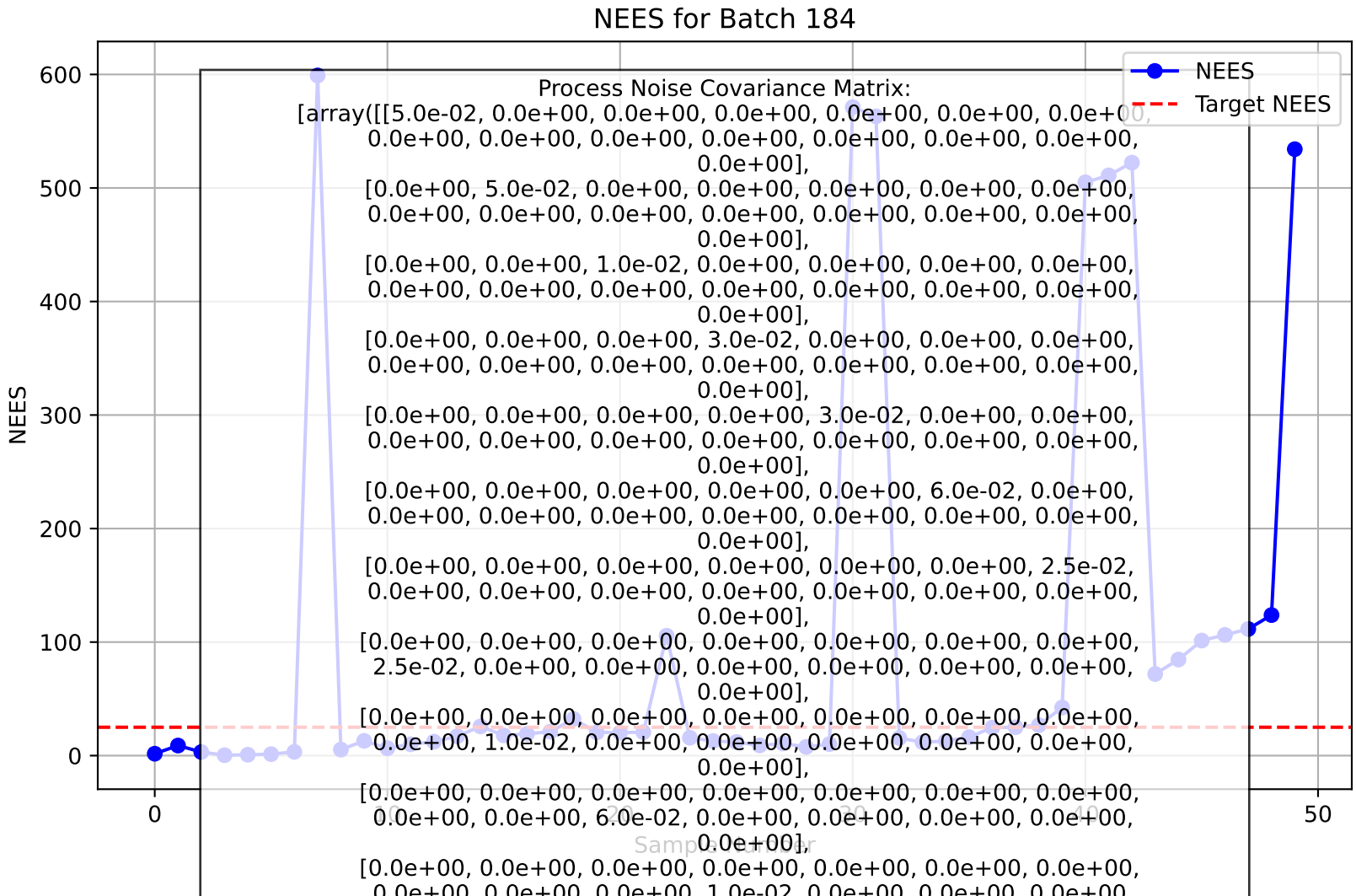

NEES for Batch 179
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50
0
100
200
300
400
500
600

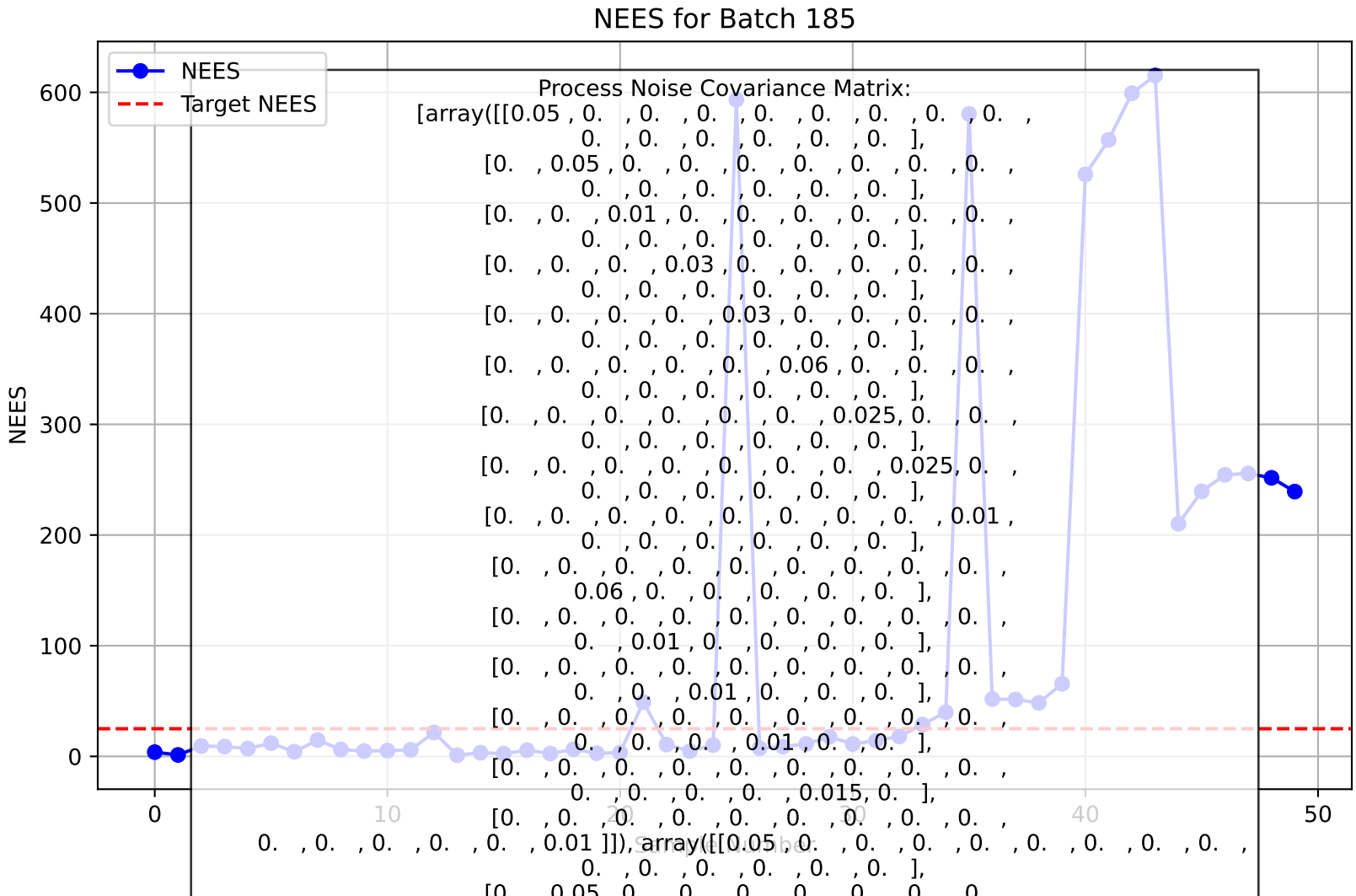

NEES for Batch 180
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
50
100
200
300
400
500
600

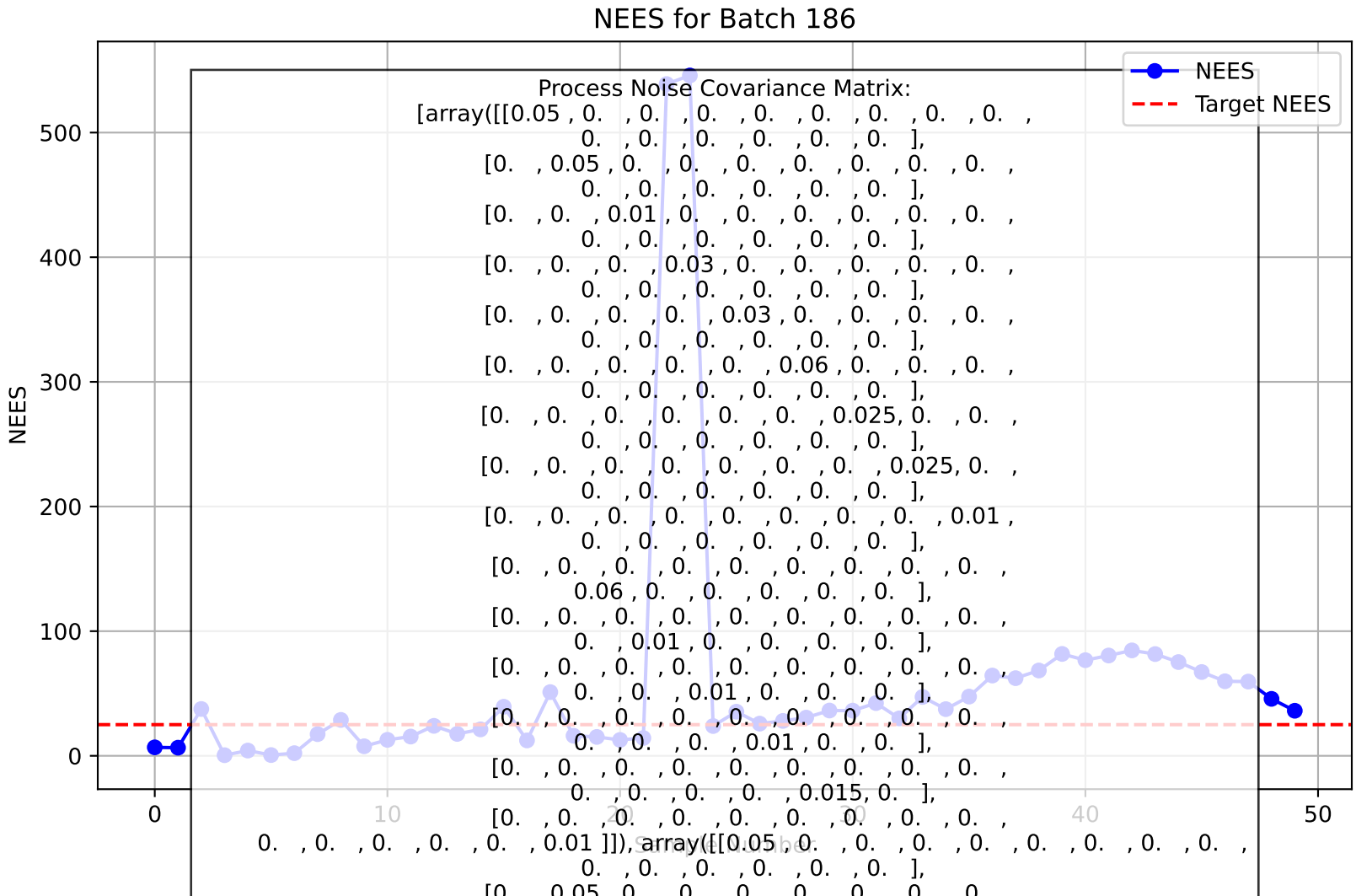

NEES for Batch 181
NEES
Target NEES
NEES
Sample Number
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

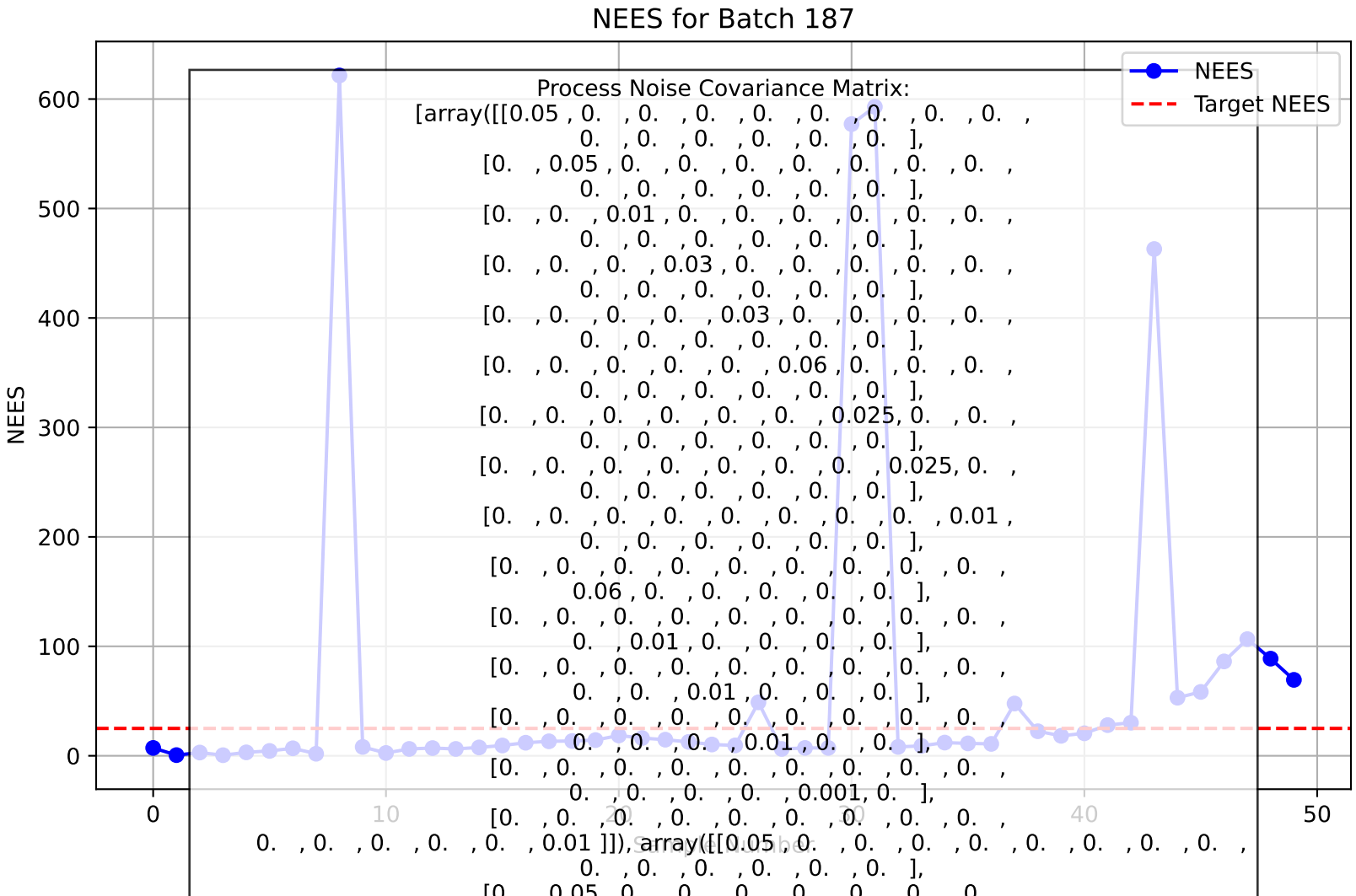

NEES for Batch 182
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

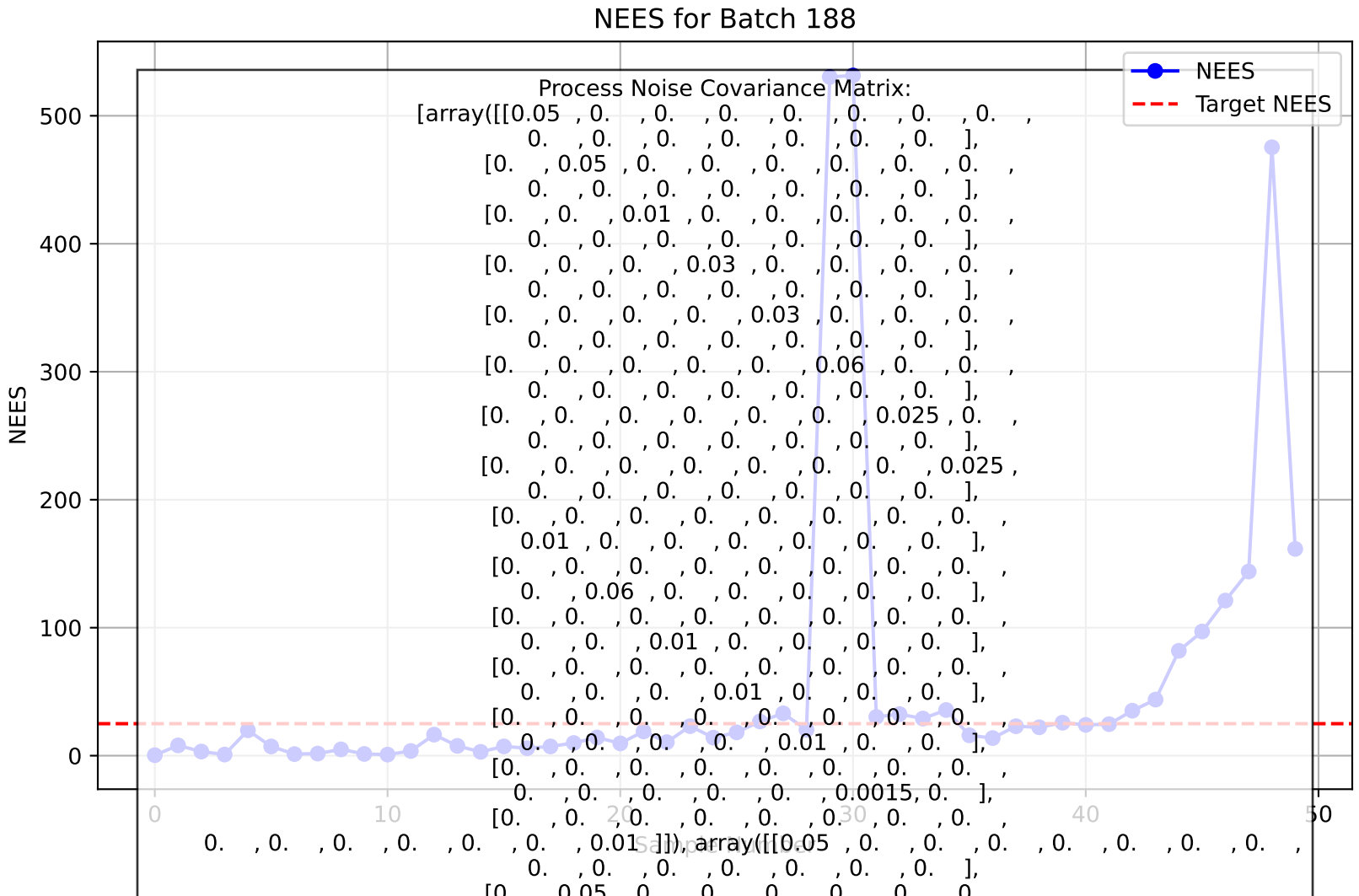

NEES for Batch 183
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50

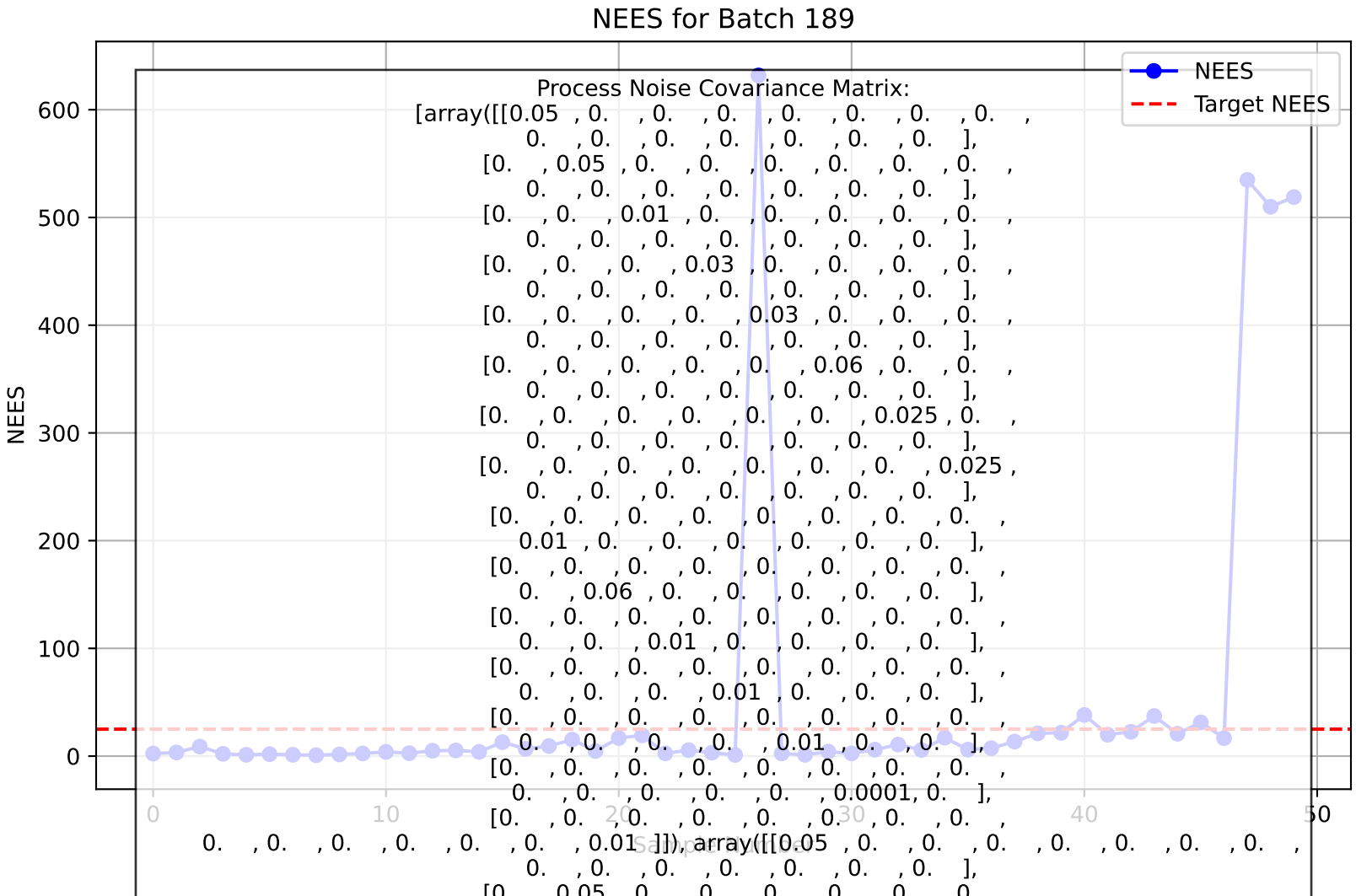

NEES for Batch 184
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600
500
400
300
200
100
0
0
50
Sample Number

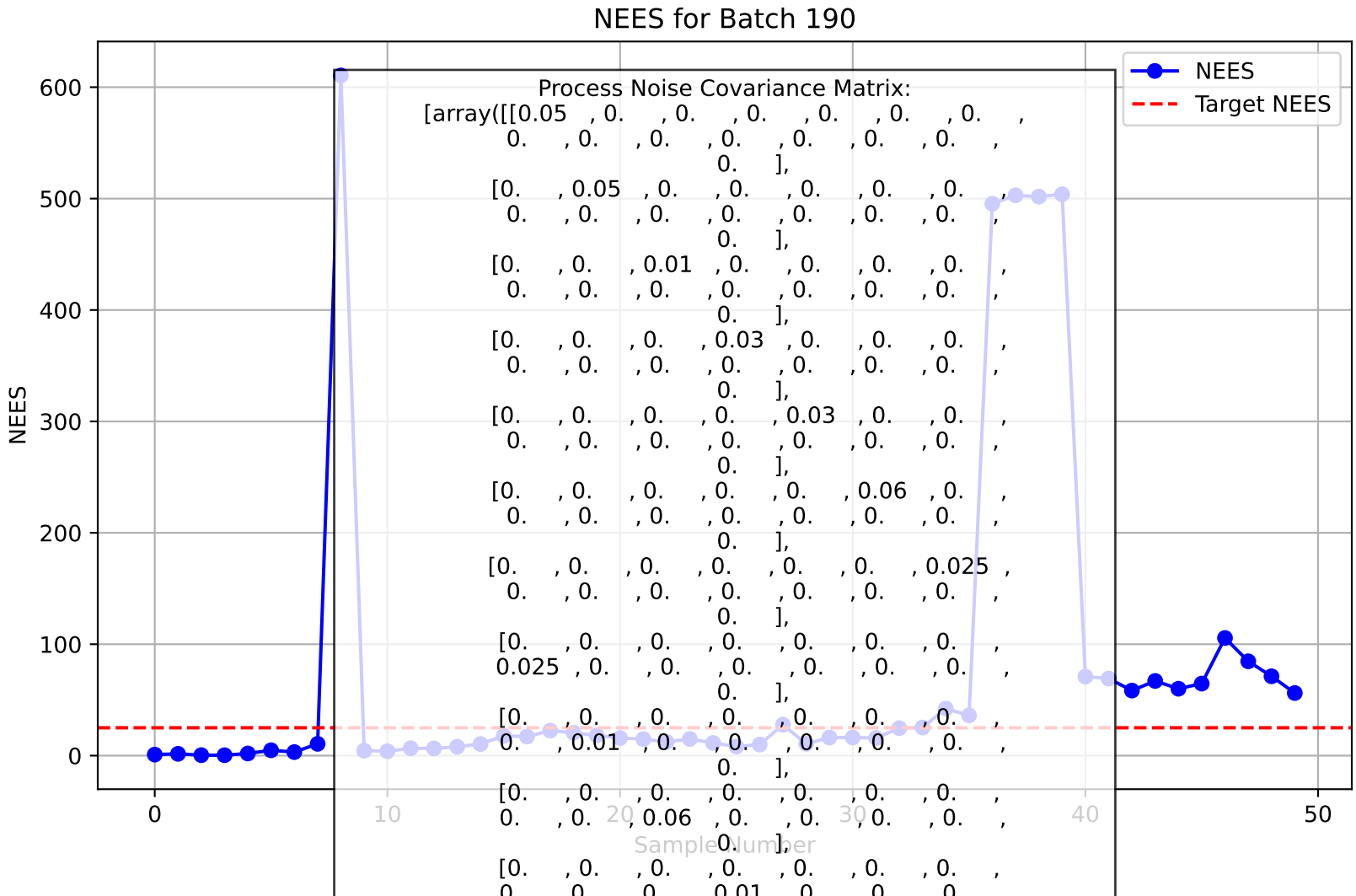

NEES for Batch 185
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.015, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600

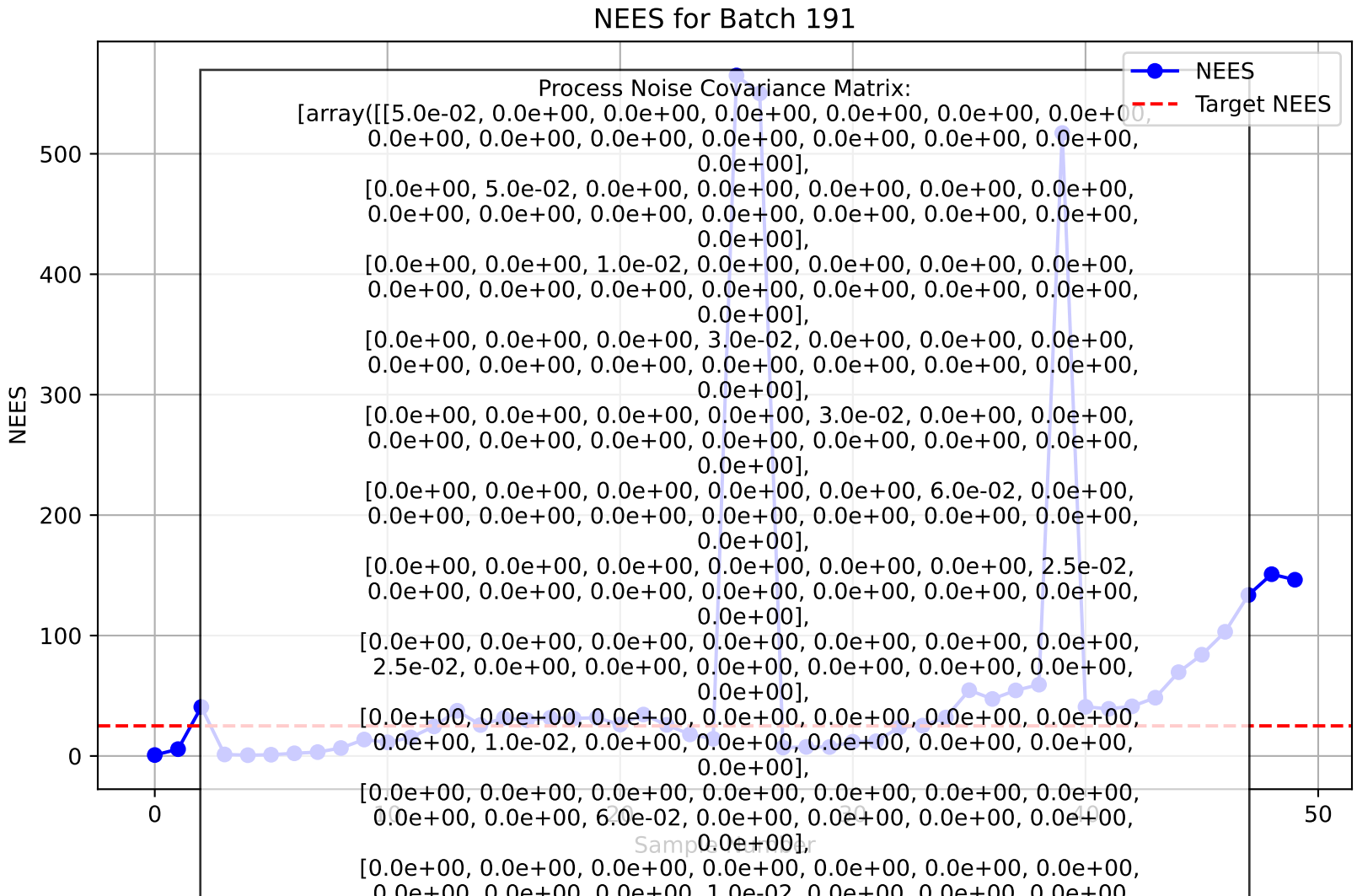

NEES for Batch 186
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.015, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,

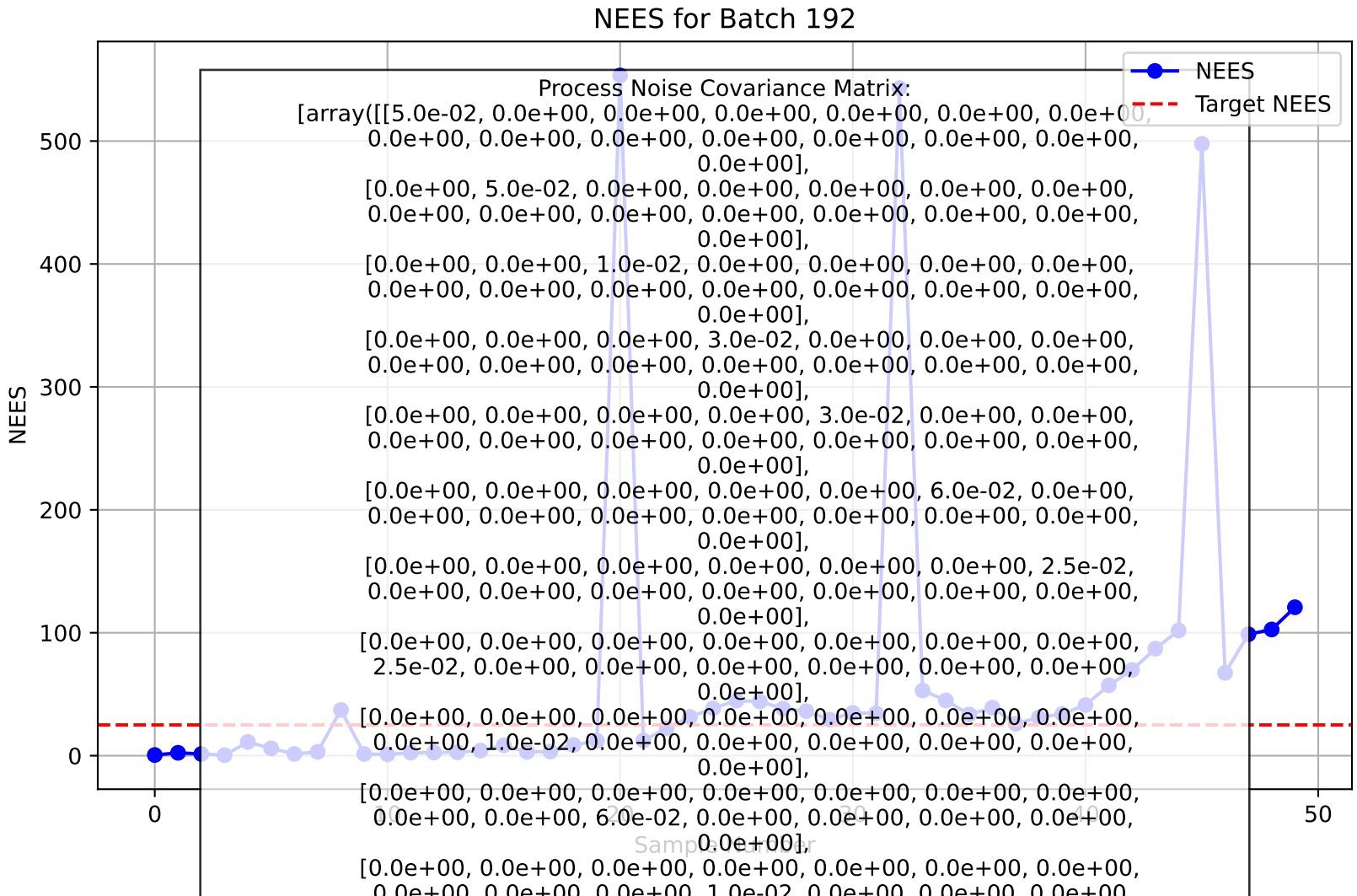

NEES for Batch 187
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.001, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50

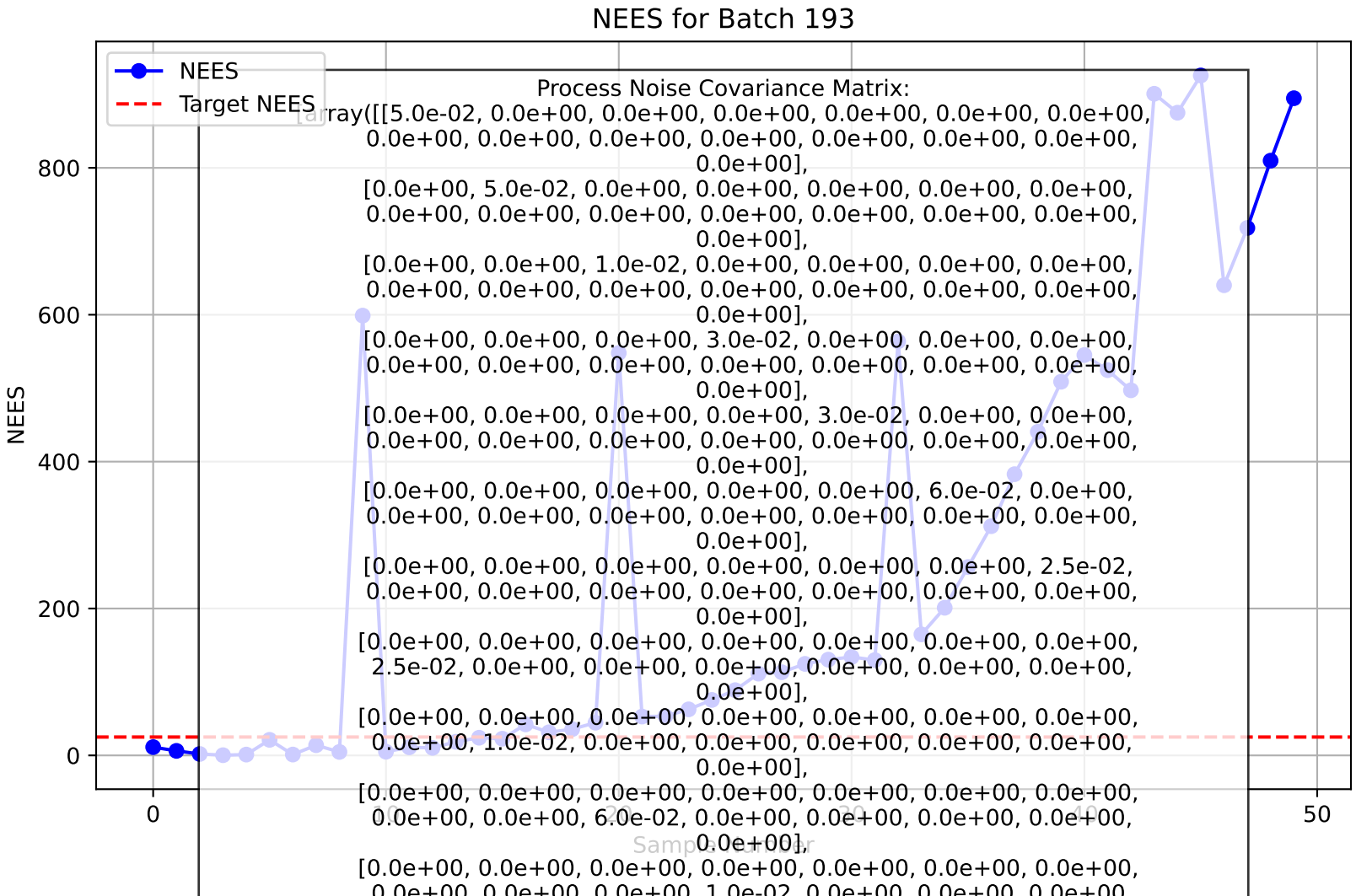

NEES for Batch 188
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.0015, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.
0
100
200
300
400
500
0
10
20
30
40
50
Sample Index

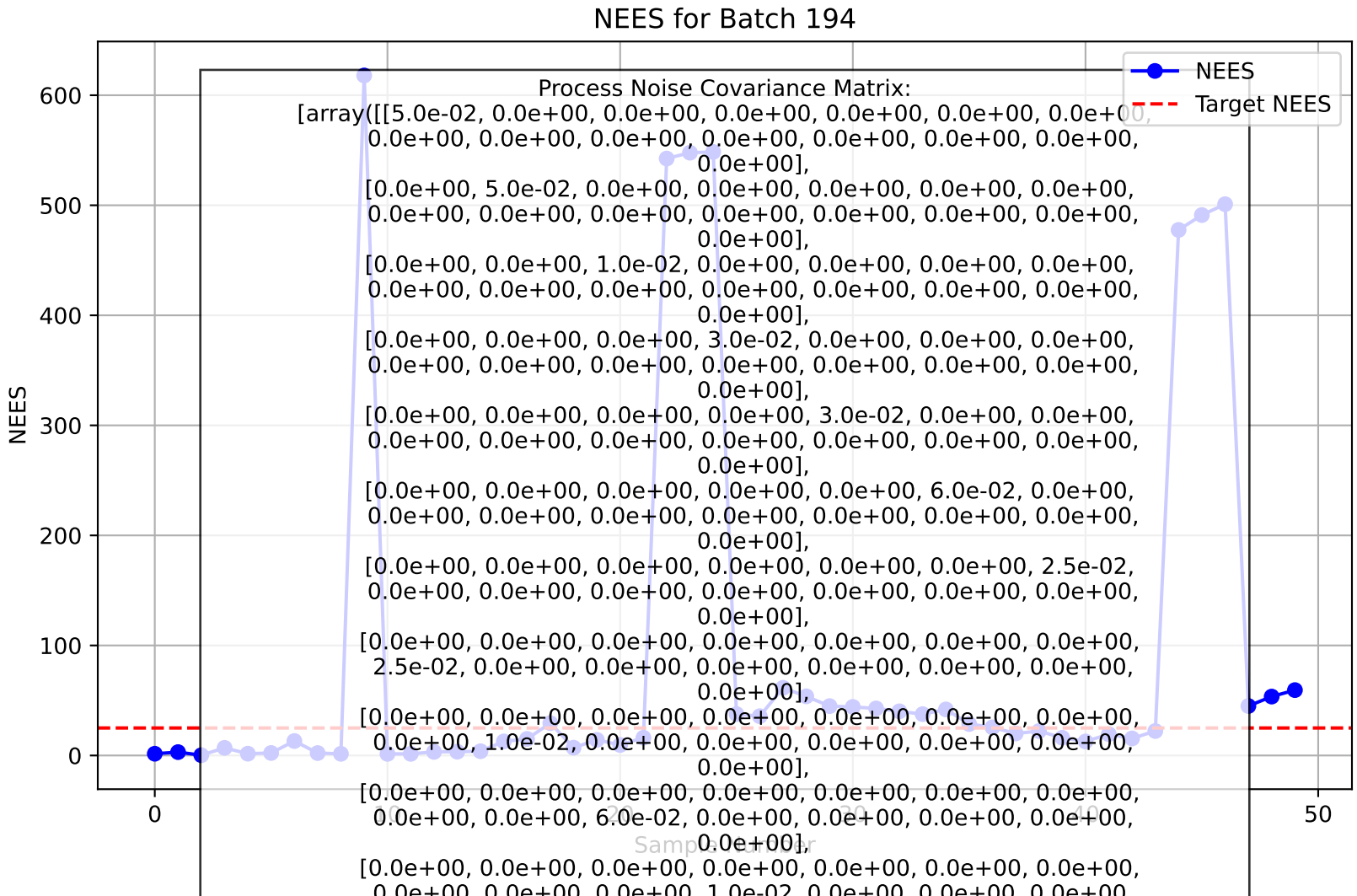

NEES for Batch 189
NEES
Target NEES
NEES
Sample Index
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.0001, 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,

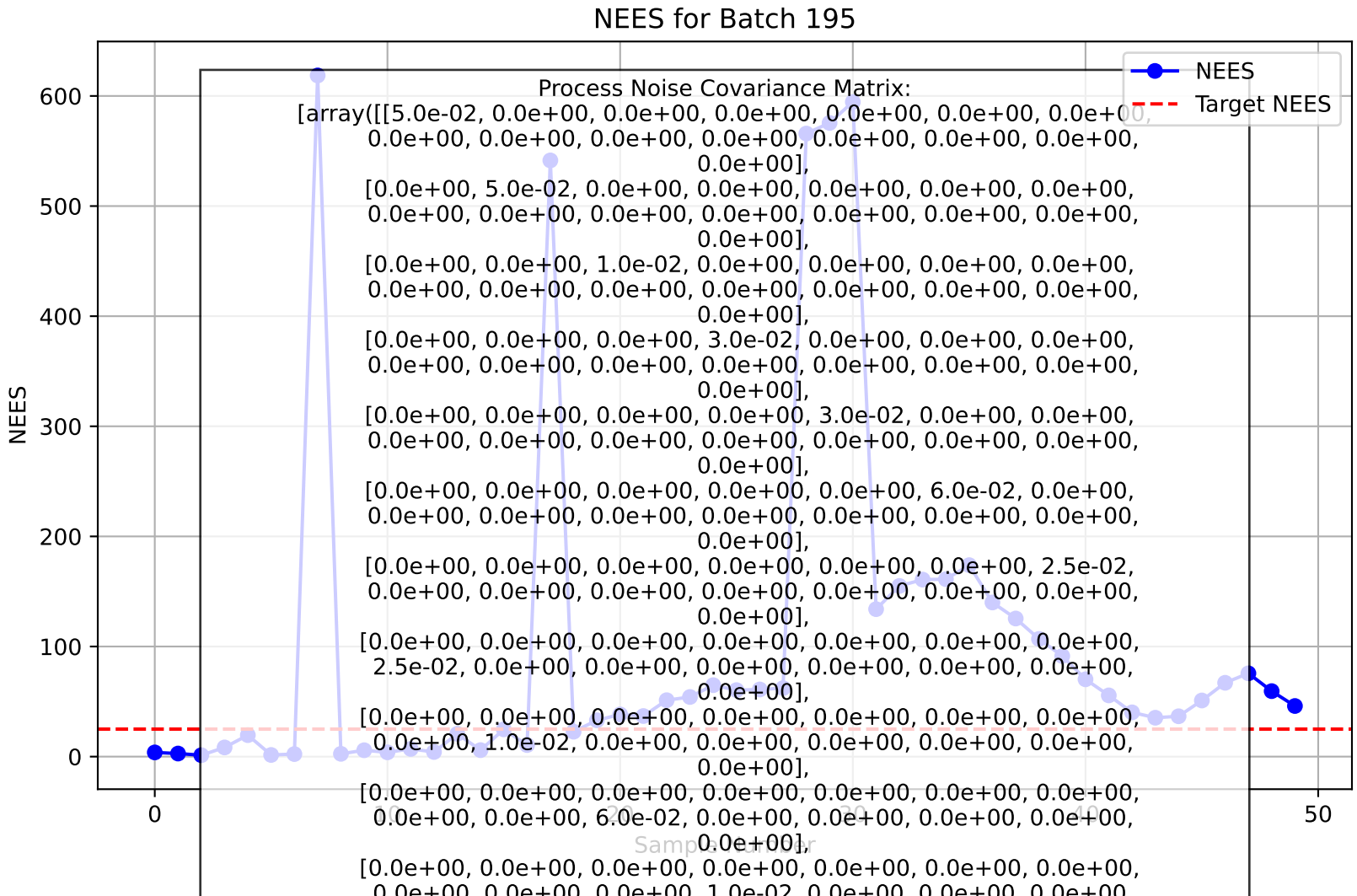

NEES for Batch 190
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
Sample Number
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50

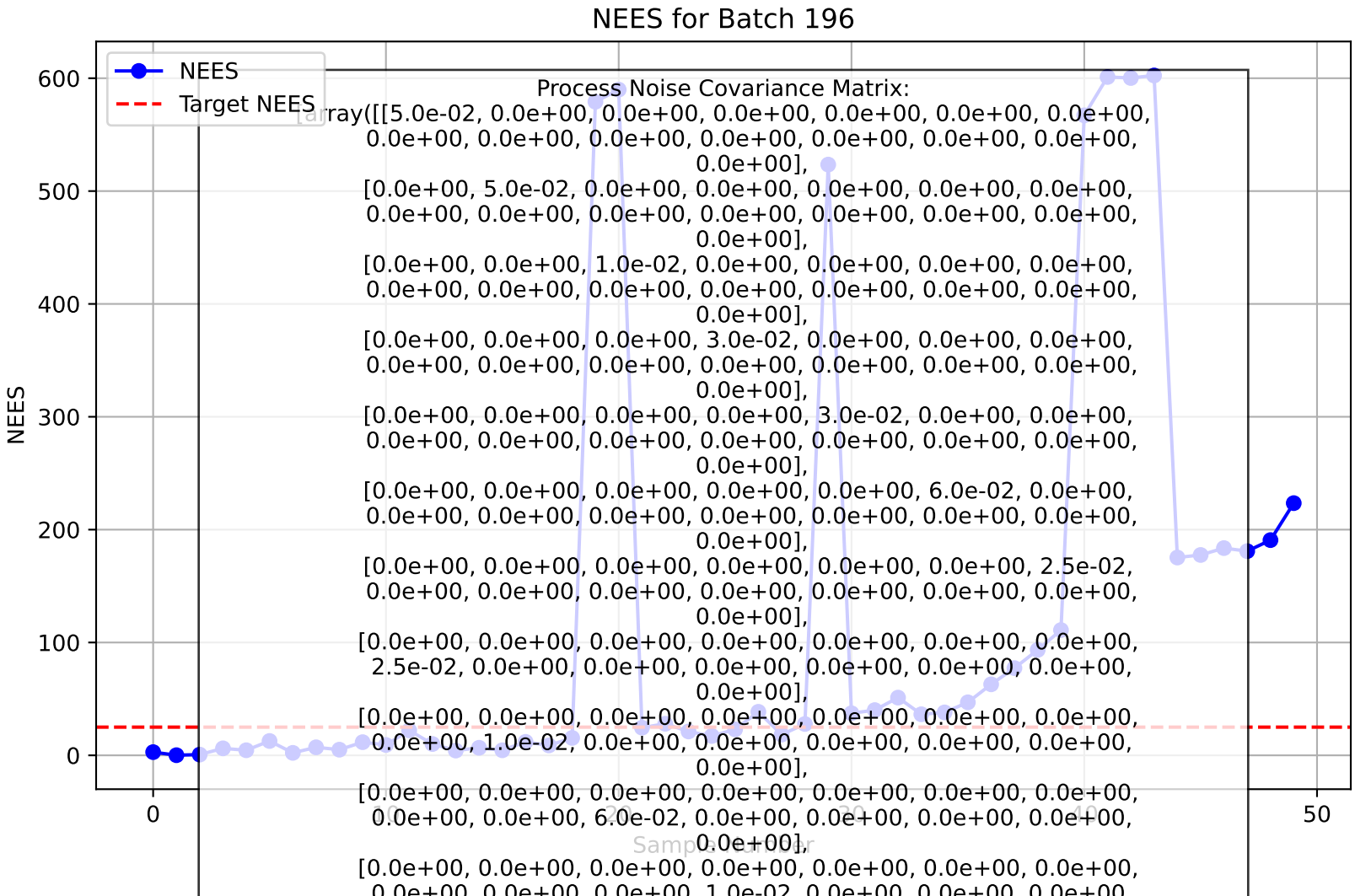

NEES for Batch 191
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
500
400
300
200
100
0
0
50

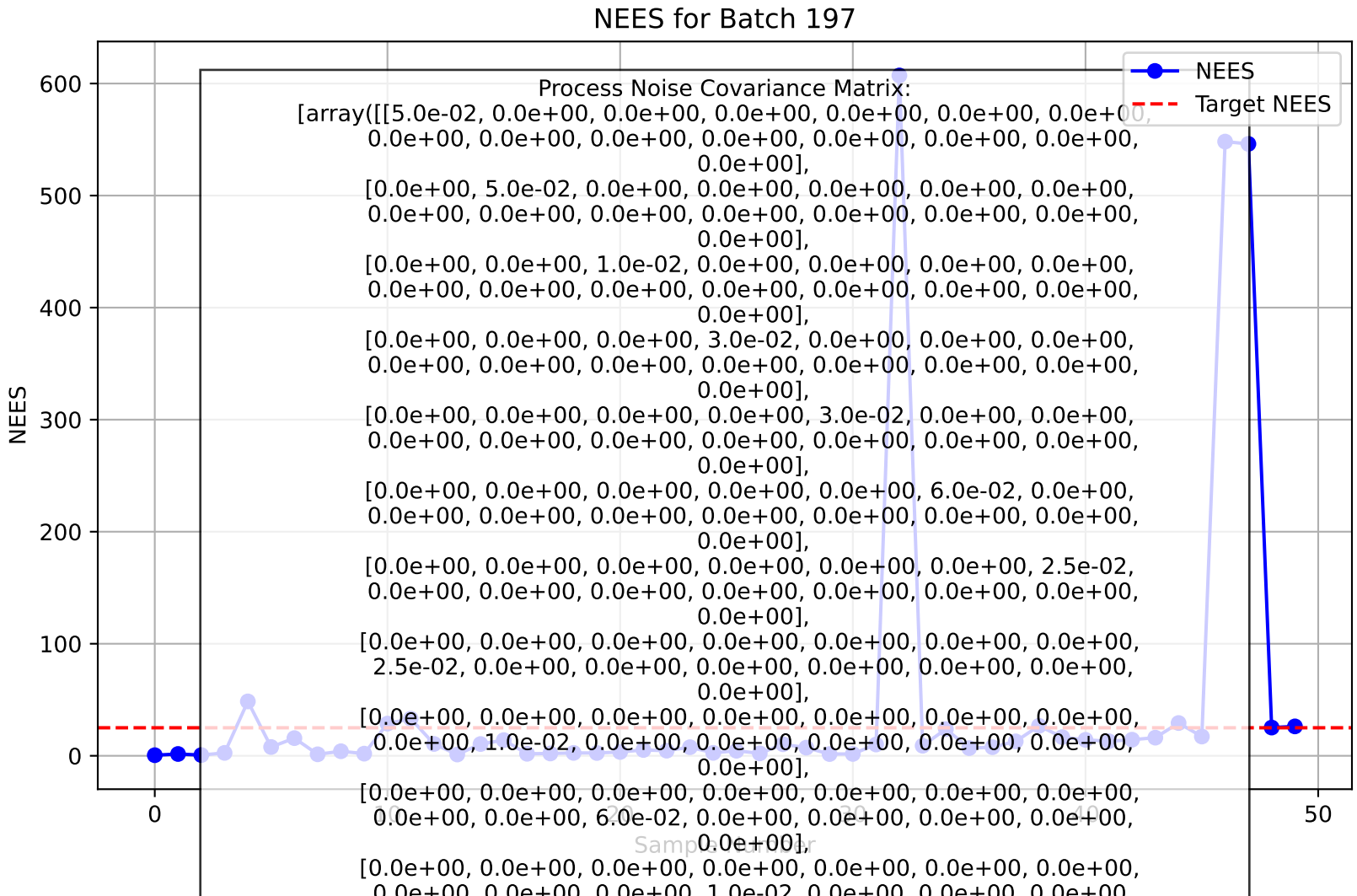

NEES for Batch 192
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
0
100
200
300
400
500
0
50

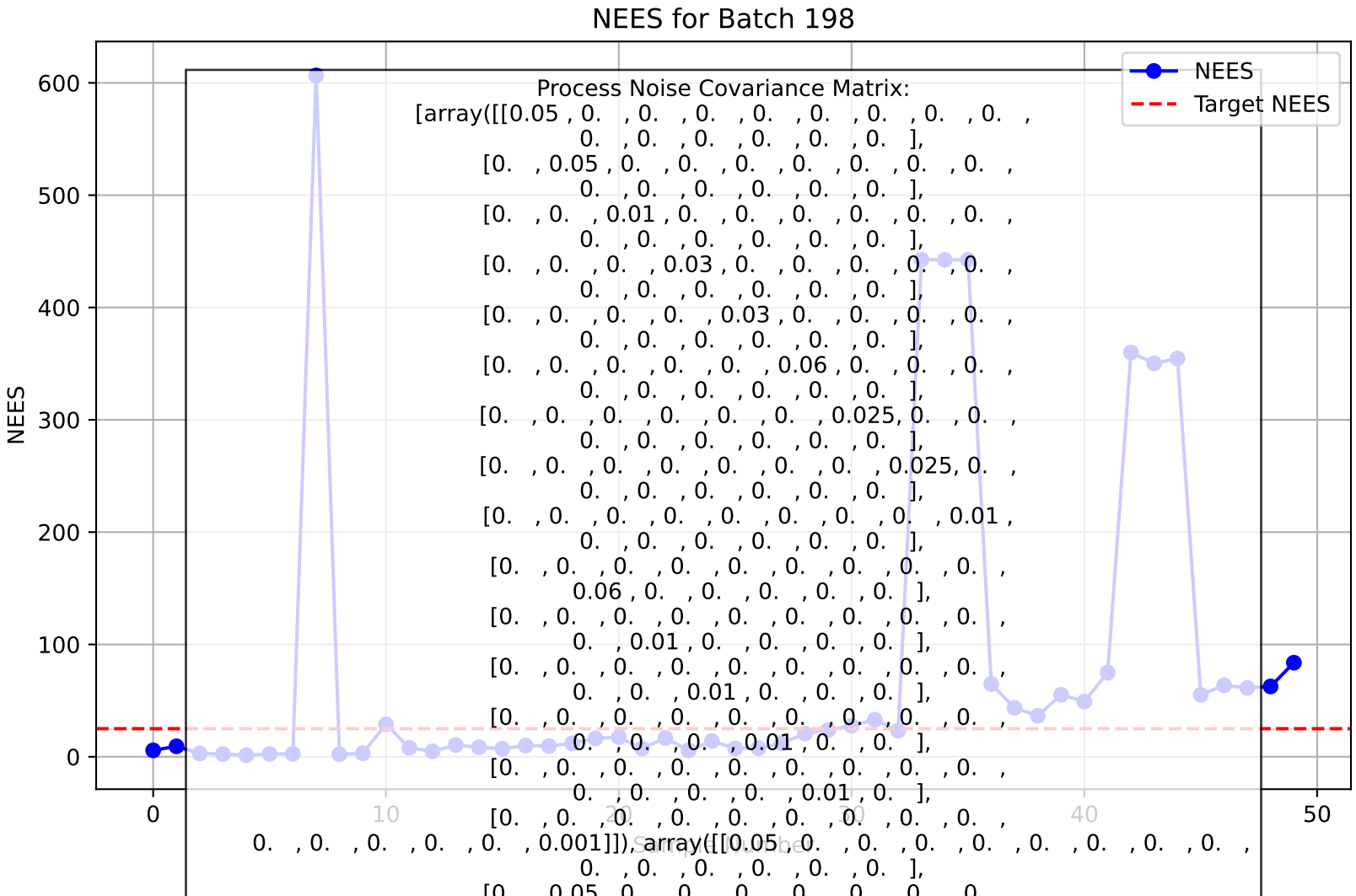

NEES for Batch 193
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
800
600
400
200
0
0
50
Sample Number

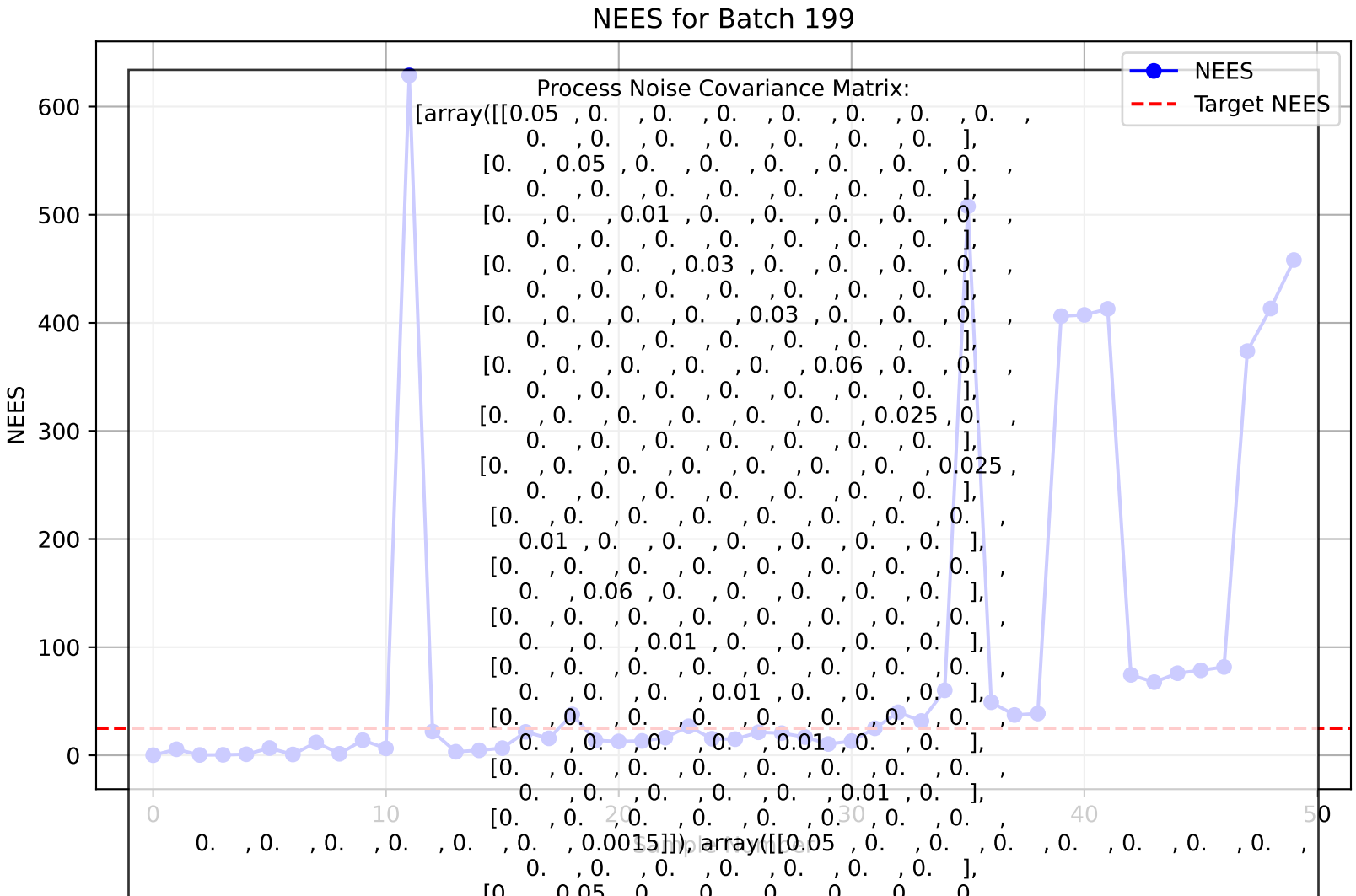

NEES for Batch 194
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600
500
400
300
200
100
0
0
50

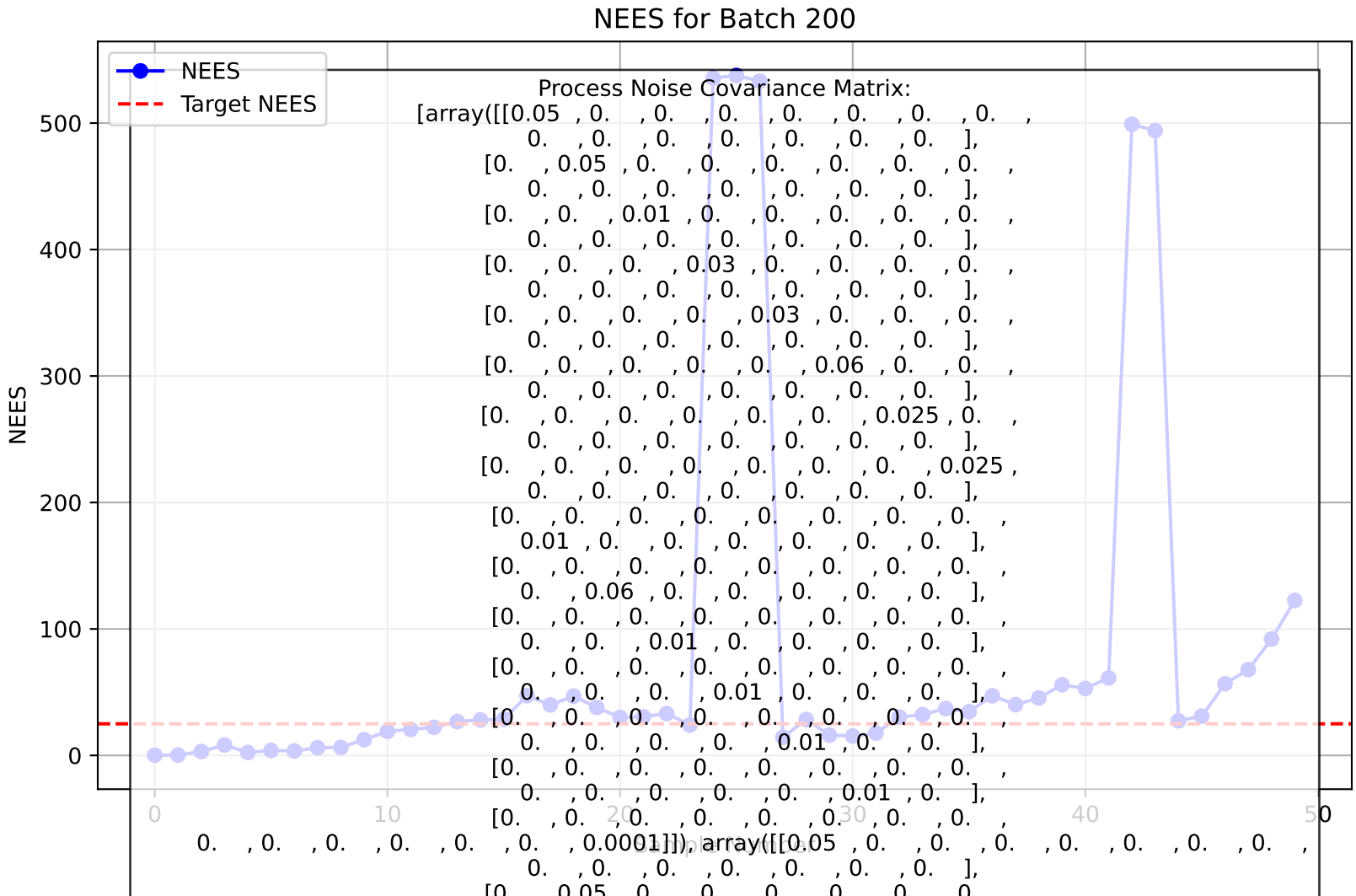

NEES for Batch 195
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
600
0
50
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,

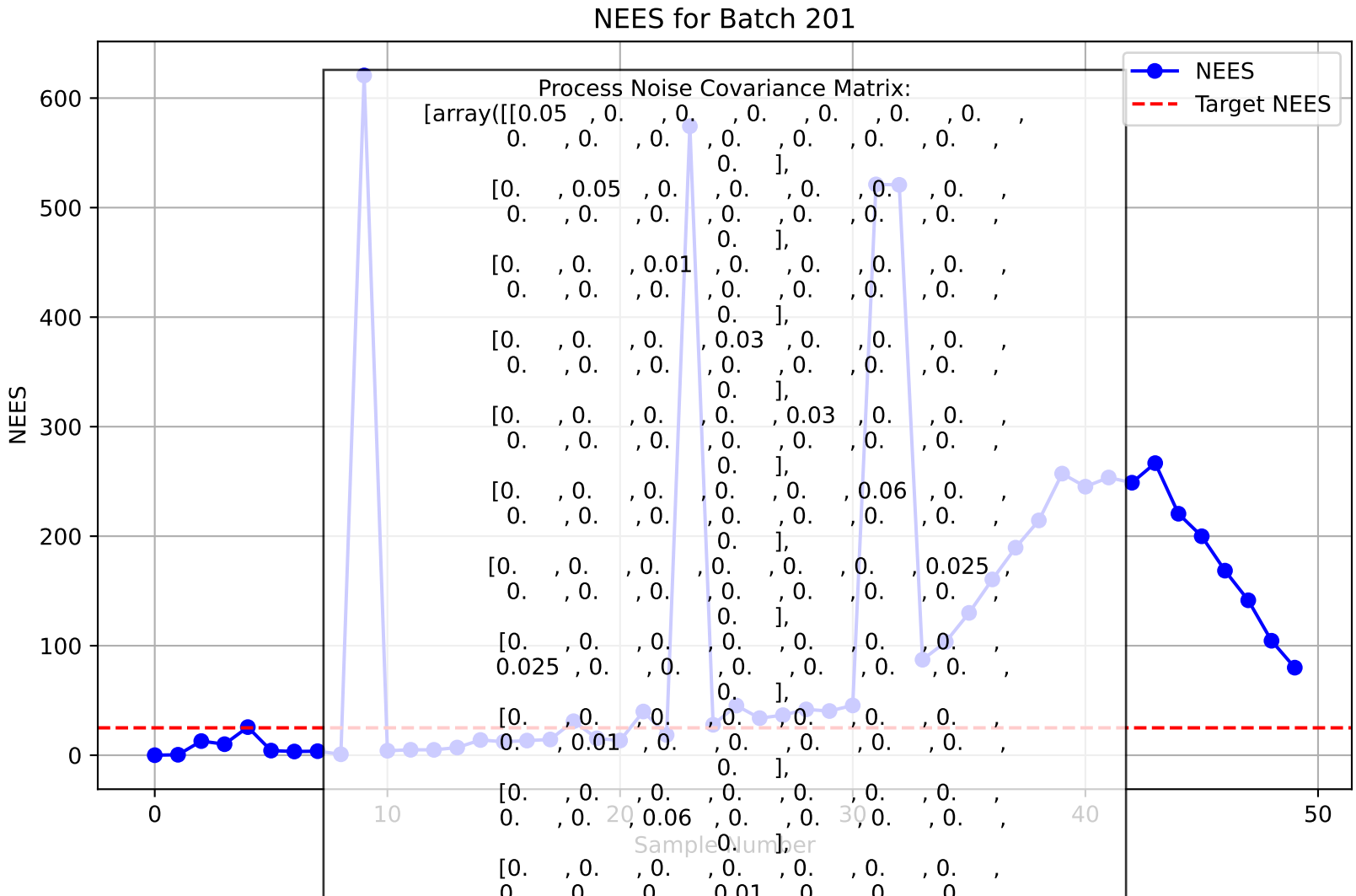

NEES for Batch 196
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600
500
400
300
200
100
0
0
50

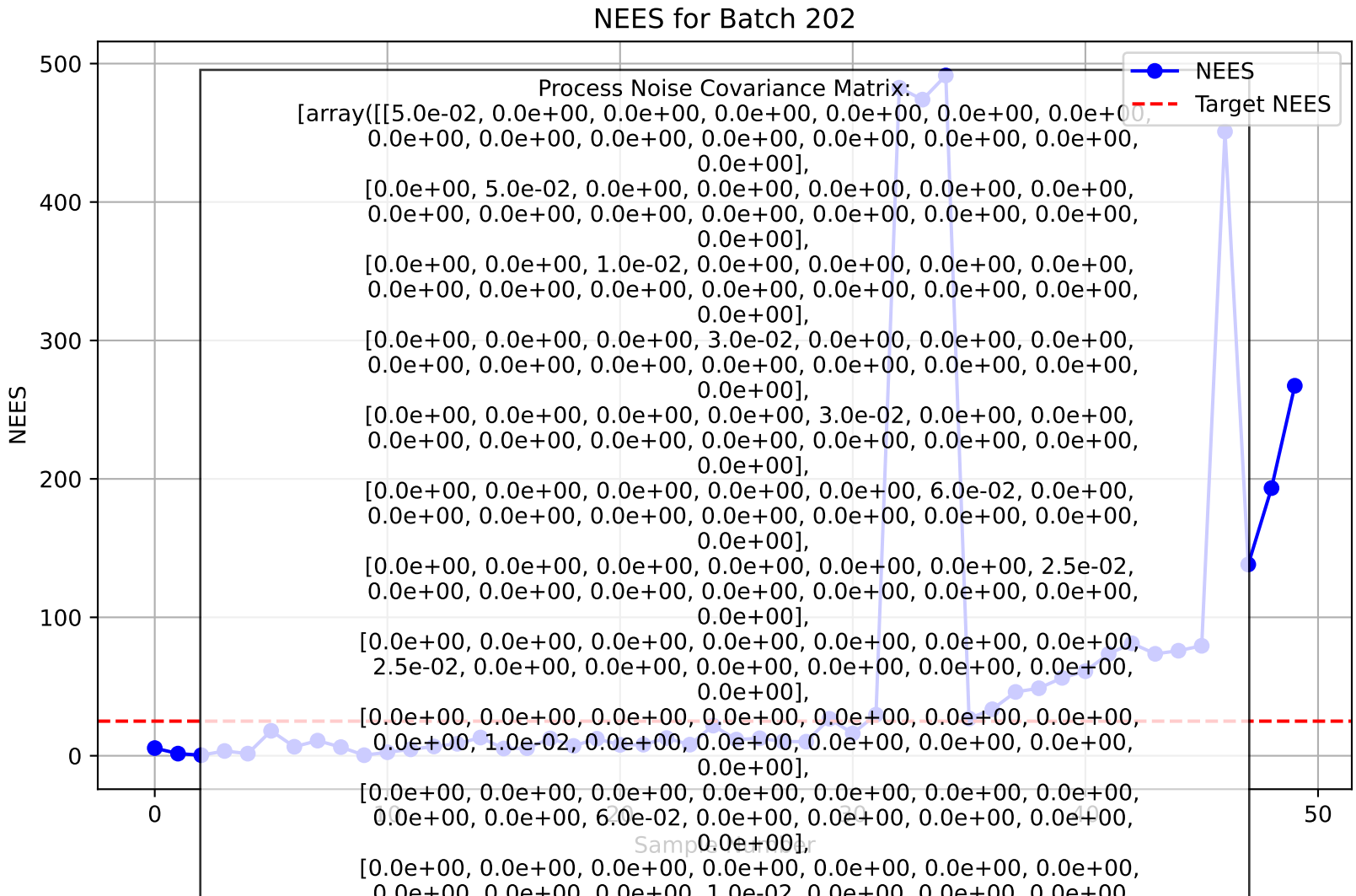

NEES for Batch 197
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
600
0
50

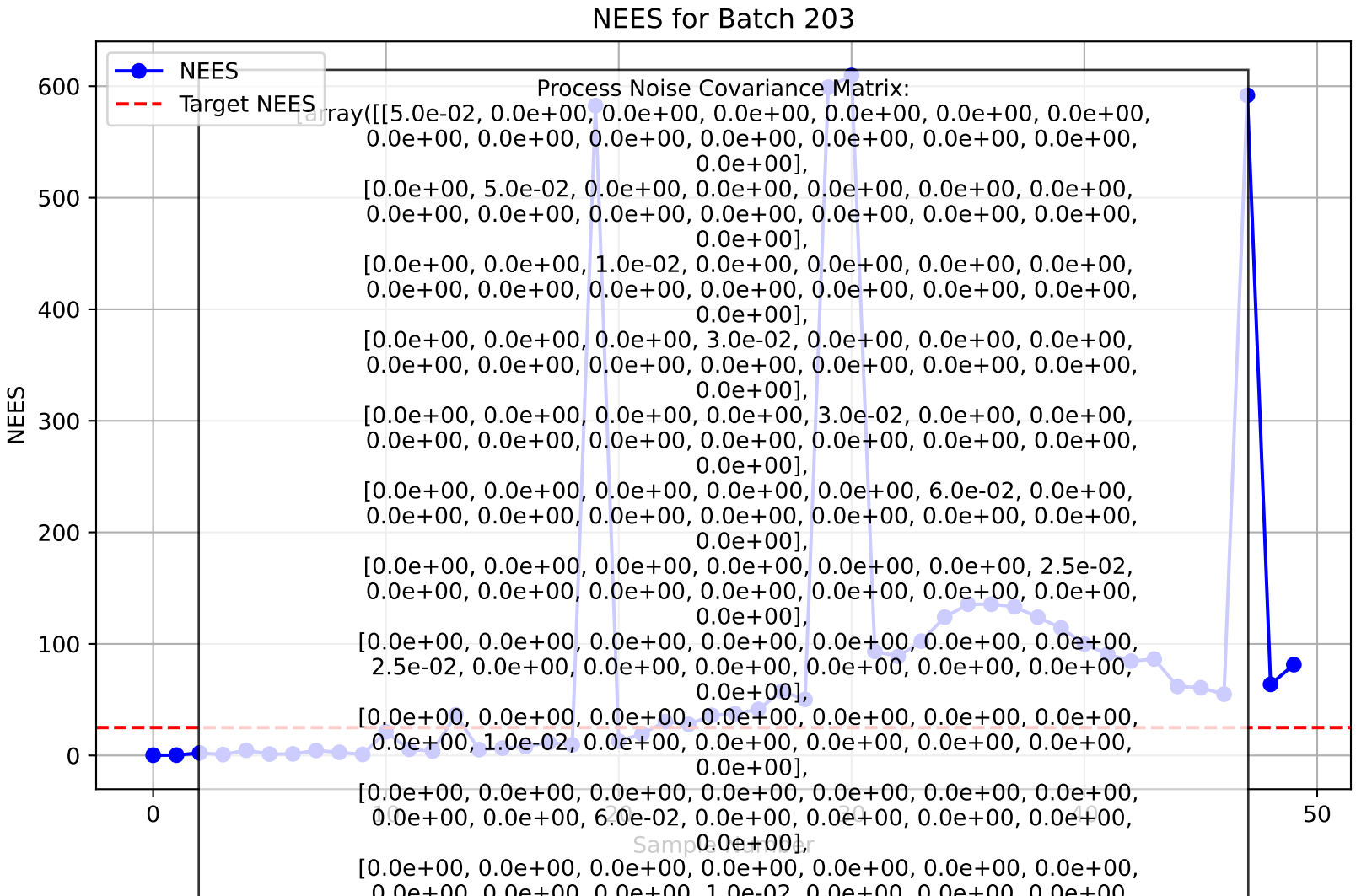

NEES for Batch 198
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.001]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. ,
NEES
0
100
200
300
400
500
600
0
10
20
30
40
50


NEES for Batch 199
NEES
Target NEES
NEES
Time Step (k)
0
100
200
300
400
500
600
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.0015]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0.


NEES for Batch 200
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.0001]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Batch
0
100
200
300
400
500
0
10
20
30
40
50


NEES for Batch 201
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
600
0
10
20
30
40
50


NEES for Batch 202
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50


NEES for Batch 203
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
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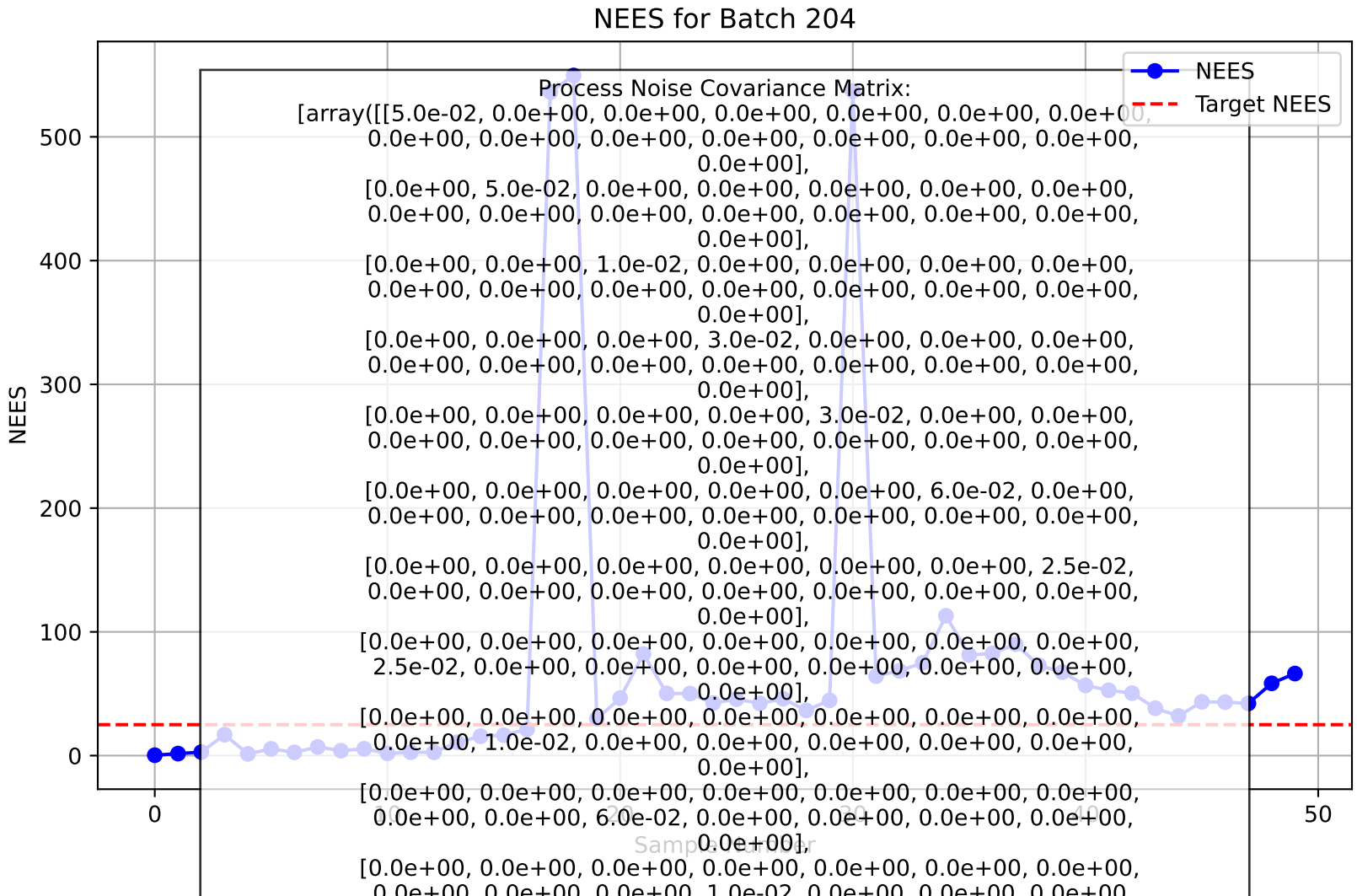
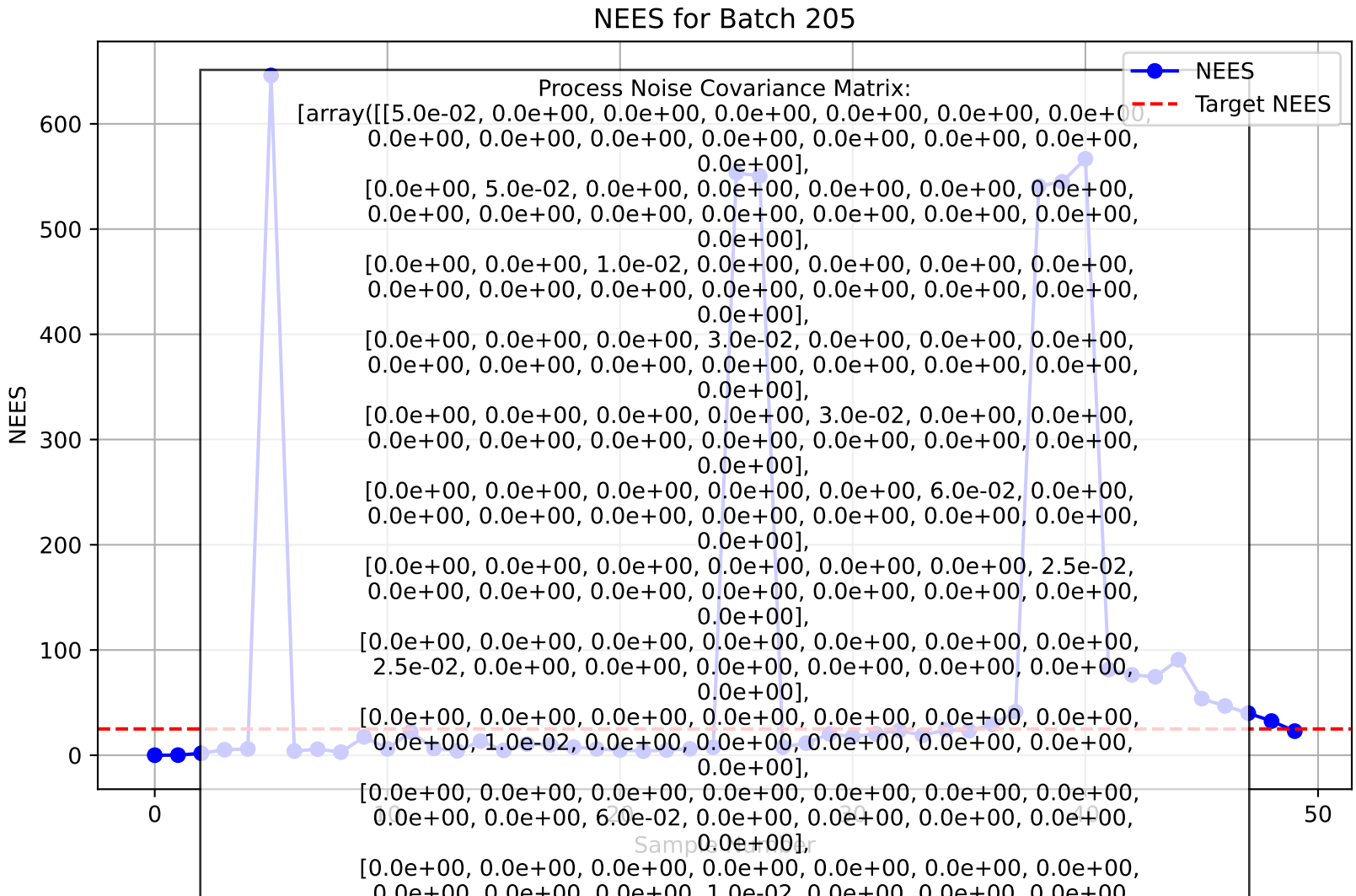
50
0
100
200
300
400
500
600


NEES for Batch 204
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50


NEES for Batch 205
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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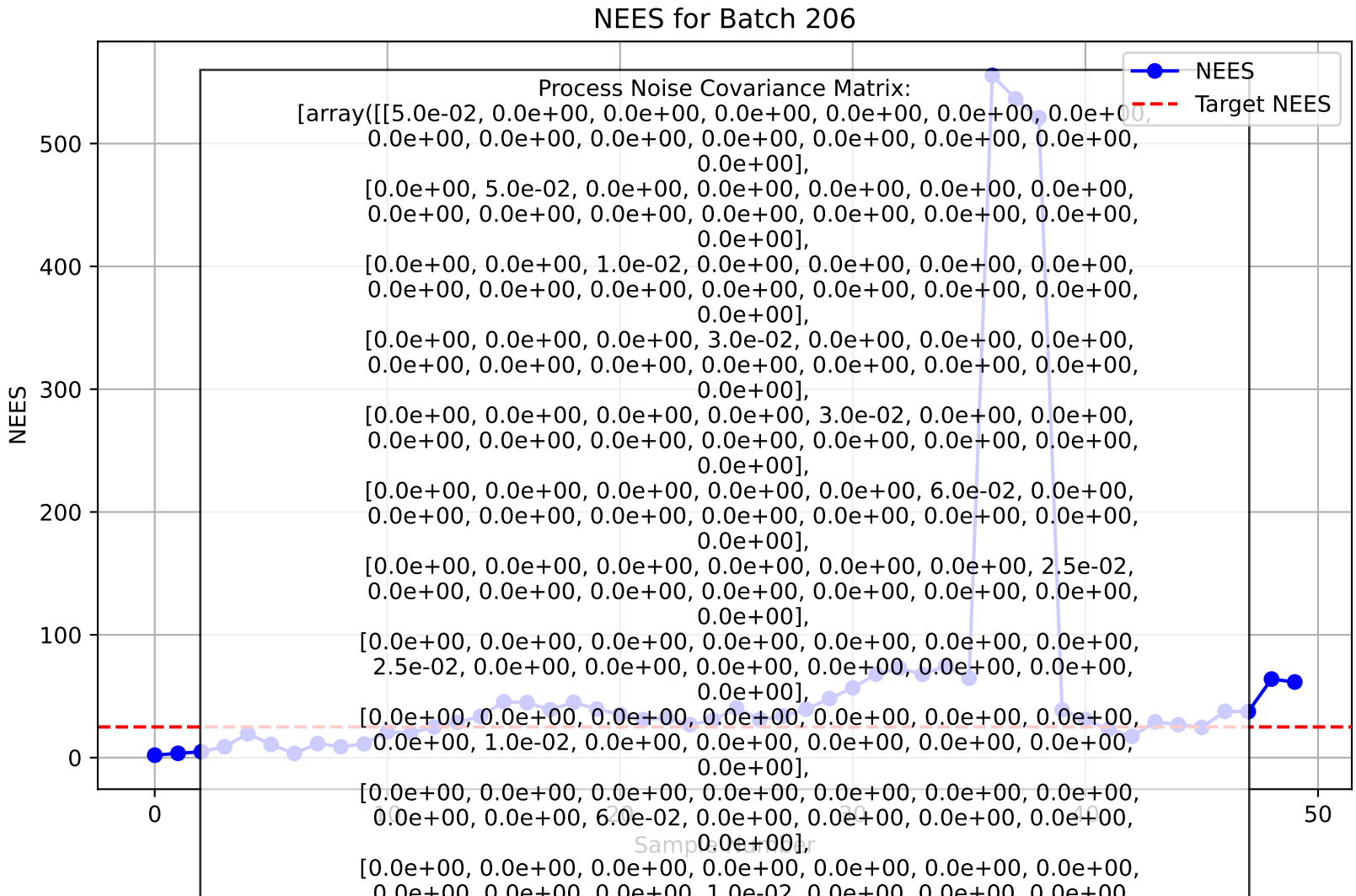
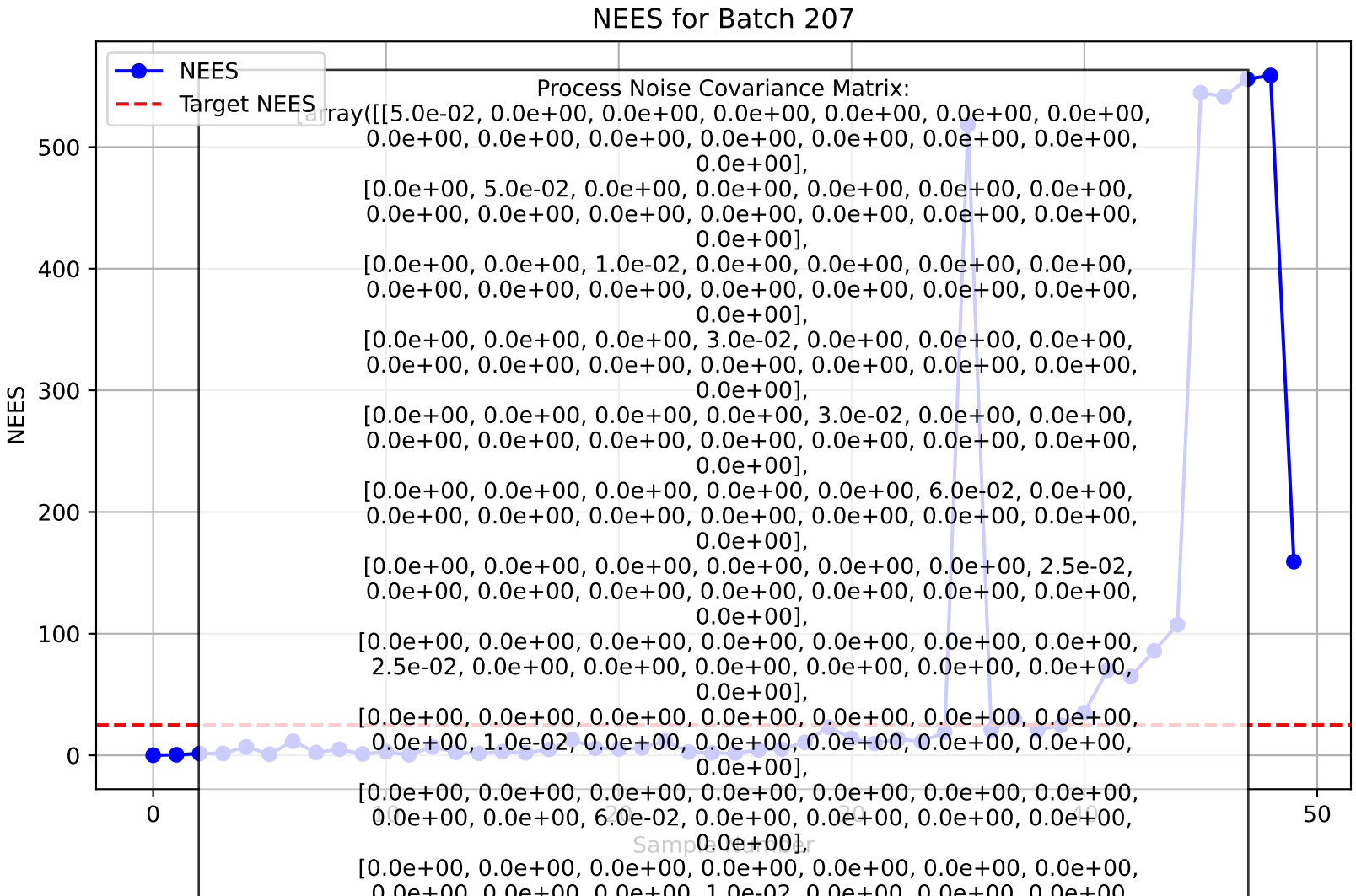
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600
500
400
300
200
100
0
0
50


NEES for Batch 206
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
100
200
300
400
500
0
50


NEES for Batch 207
NEES
Target NEES
Process Noise Covariance Matrix:
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0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
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0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-02,
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0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
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0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
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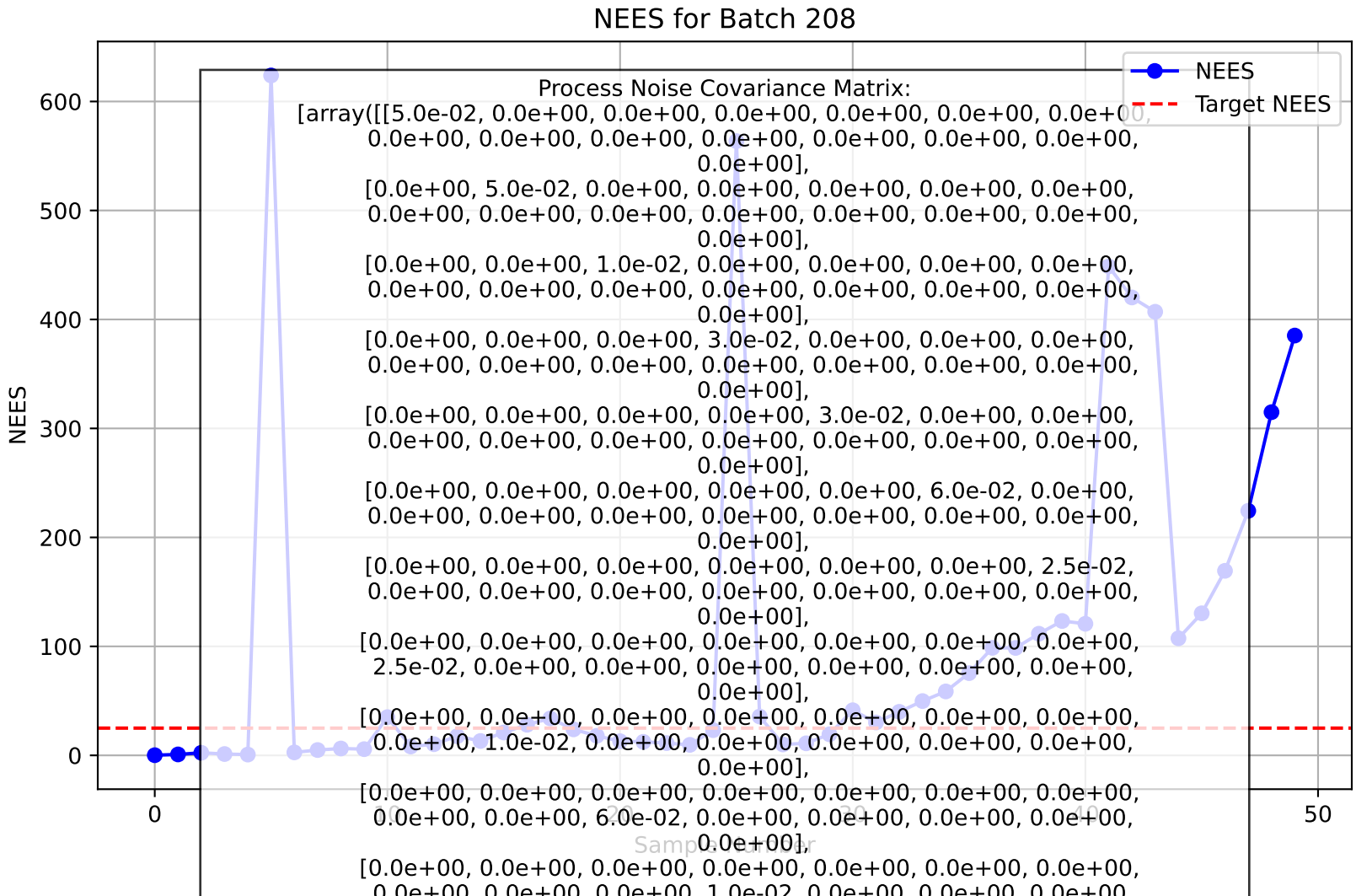
200
300
400
500
0
50


NEES for Batch 208
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-02, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00,
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0.0e+00],
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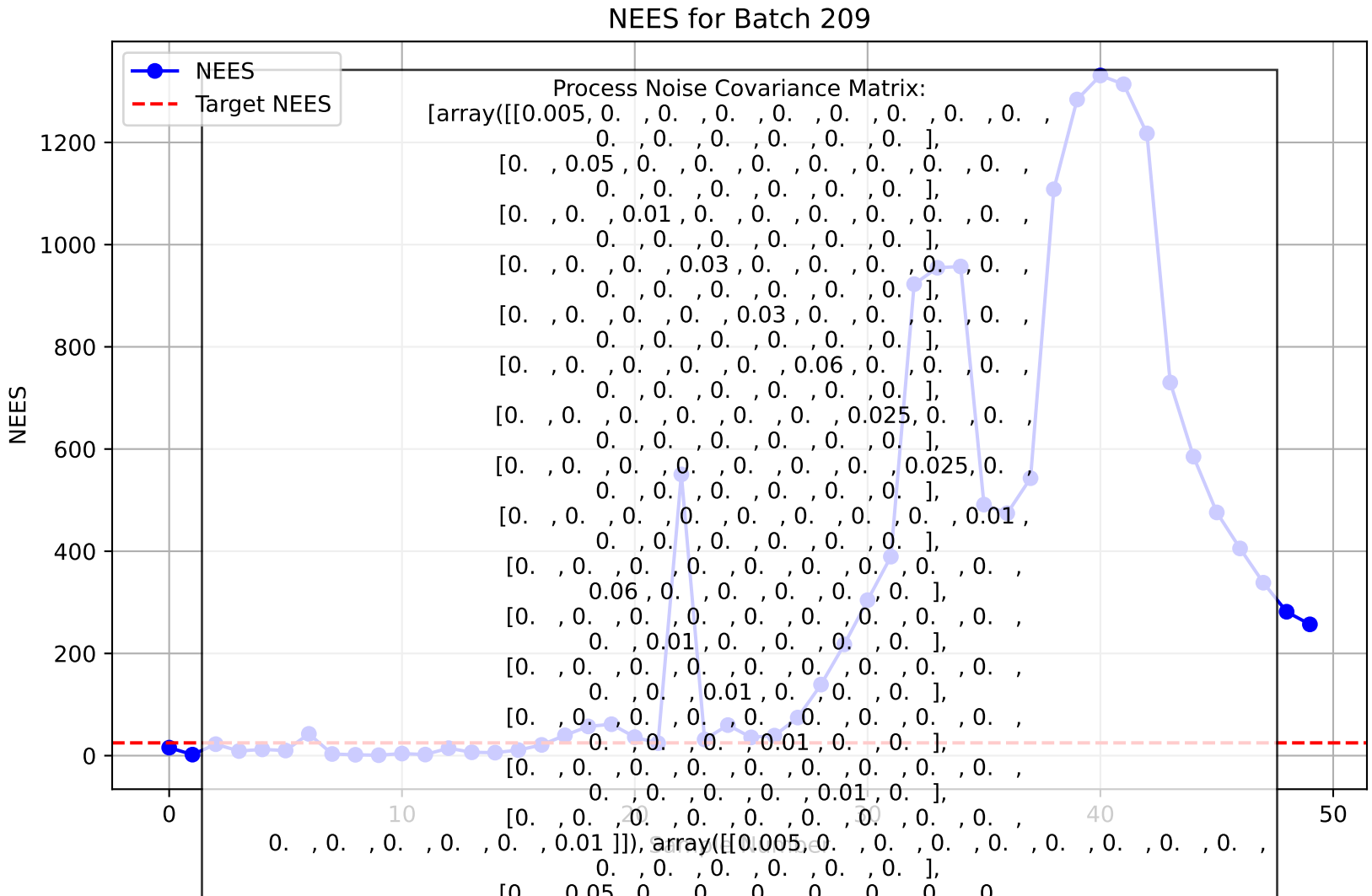
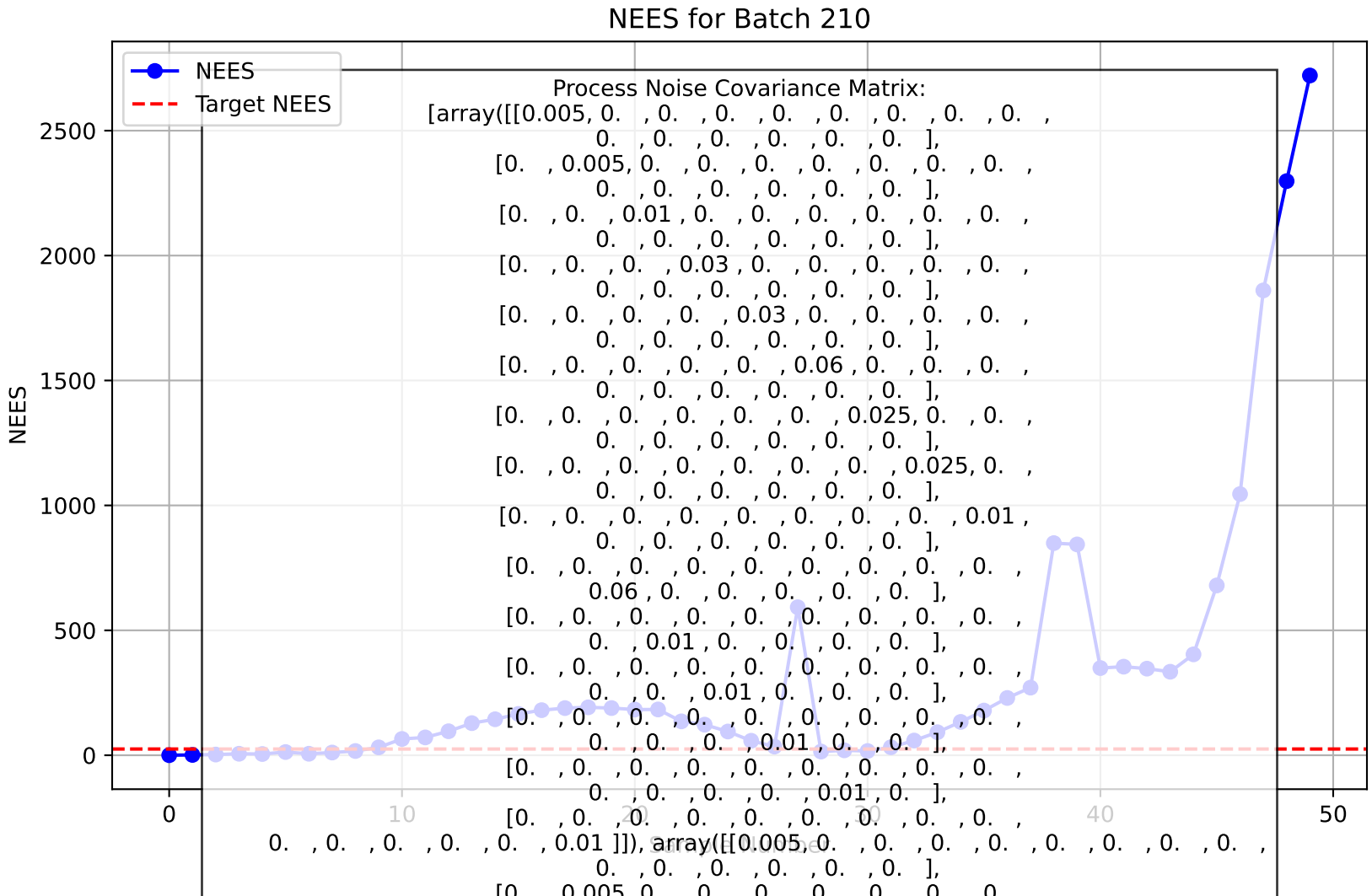
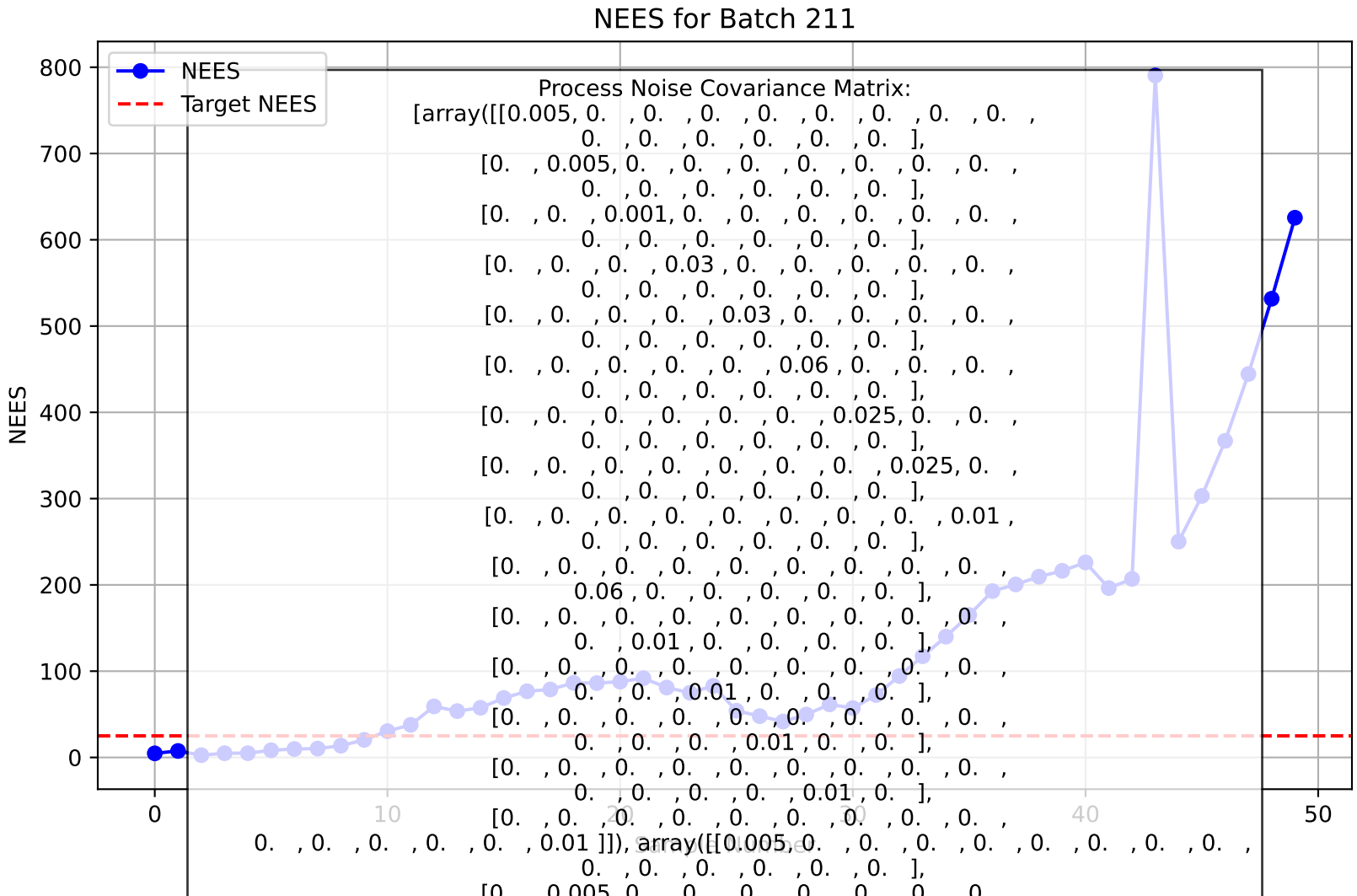
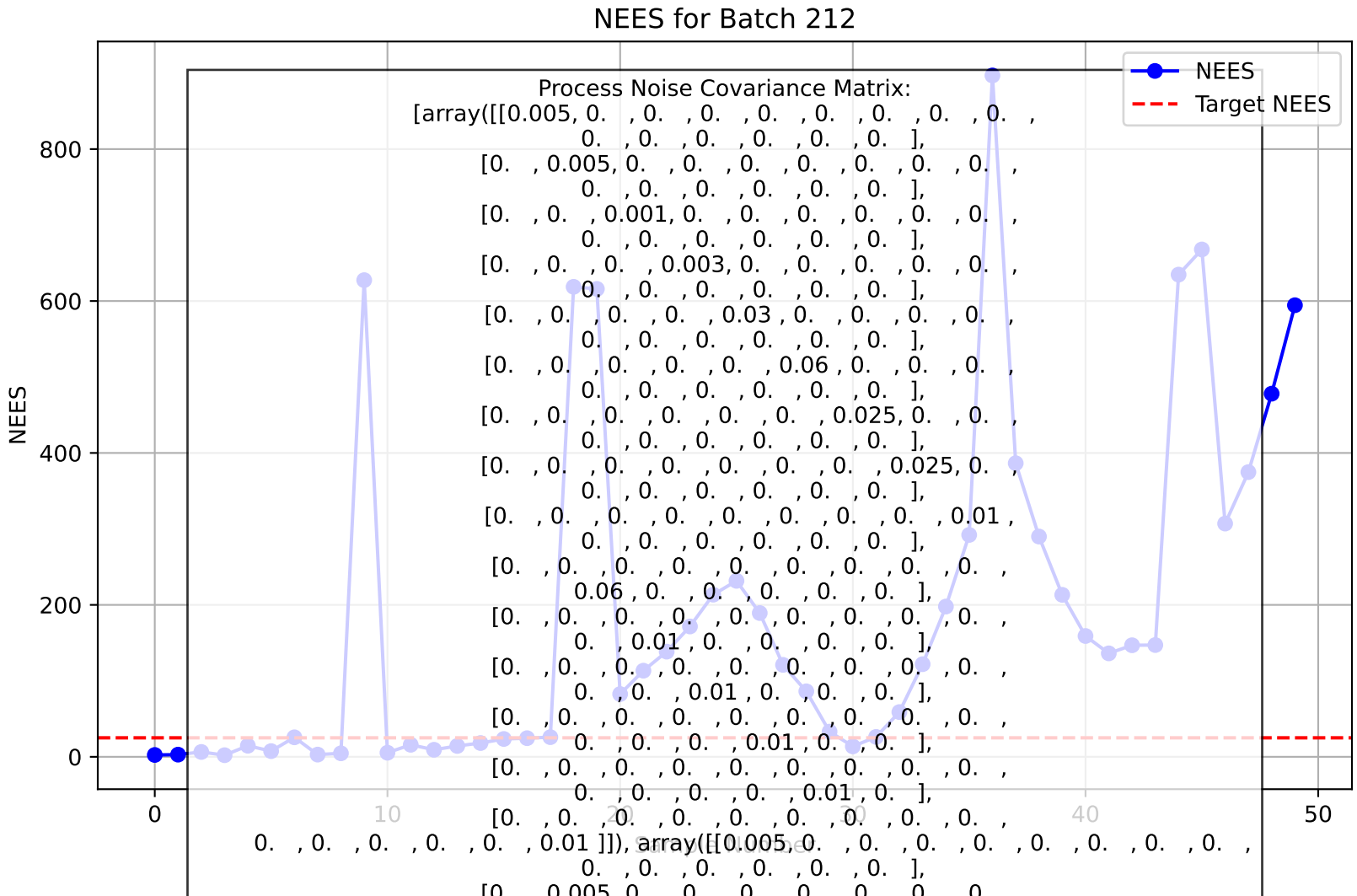
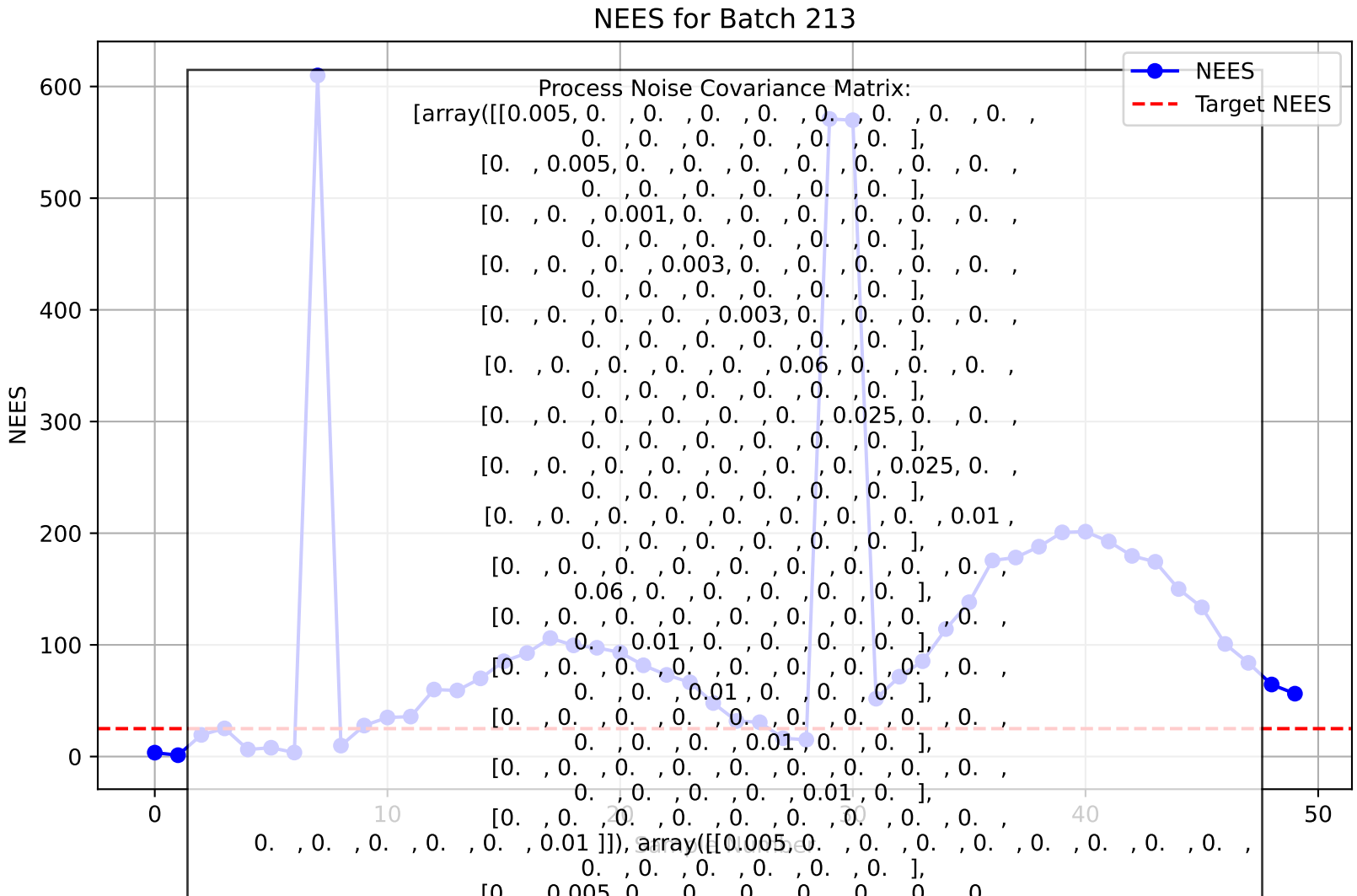
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-02, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-02, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
600
500
400
300
200
100
0
0
50
Sample Number

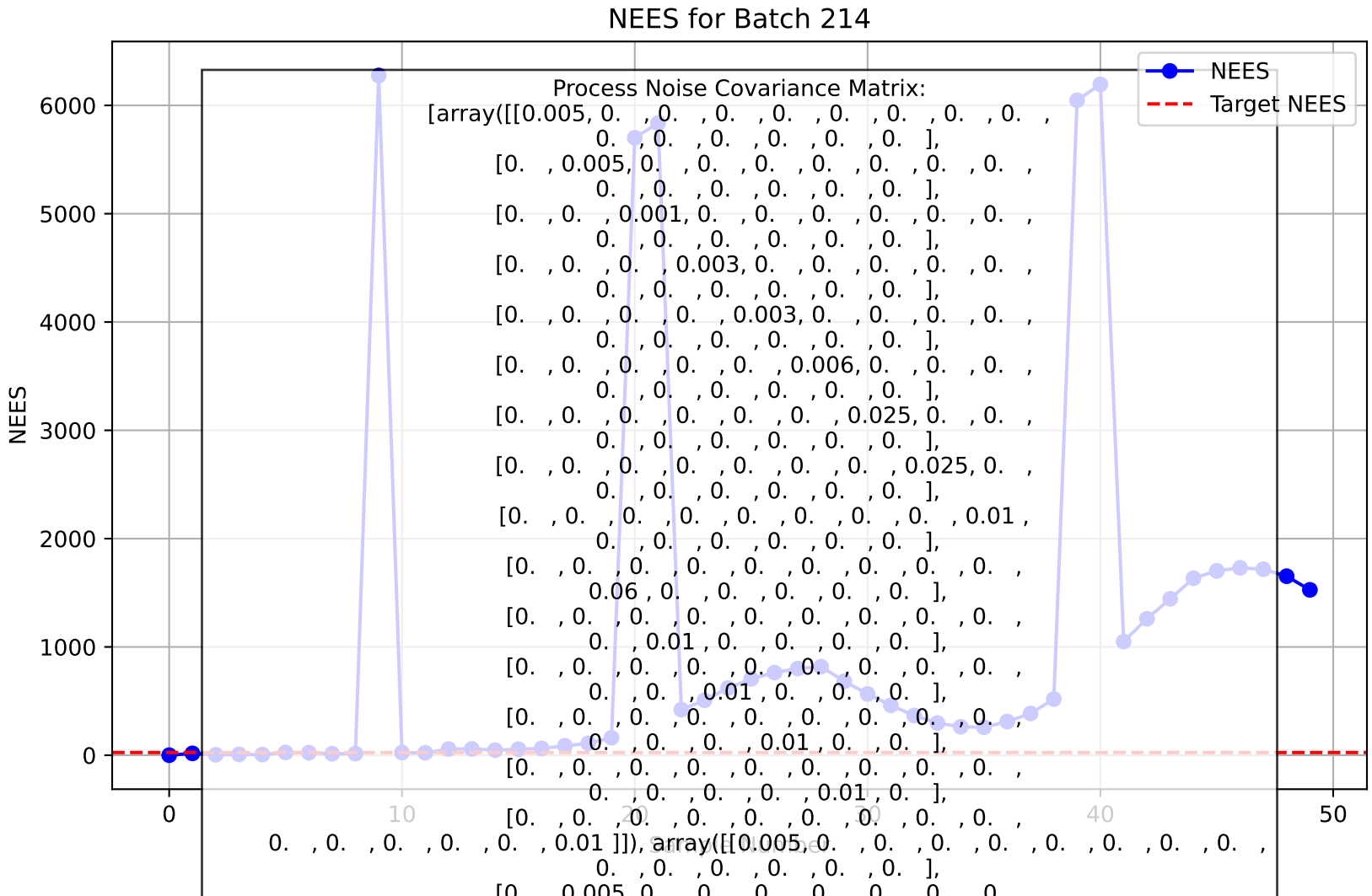

NEES for Batch 209
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0.
0
200
400
600
800
1000
1200
0
10
20
30
40
50

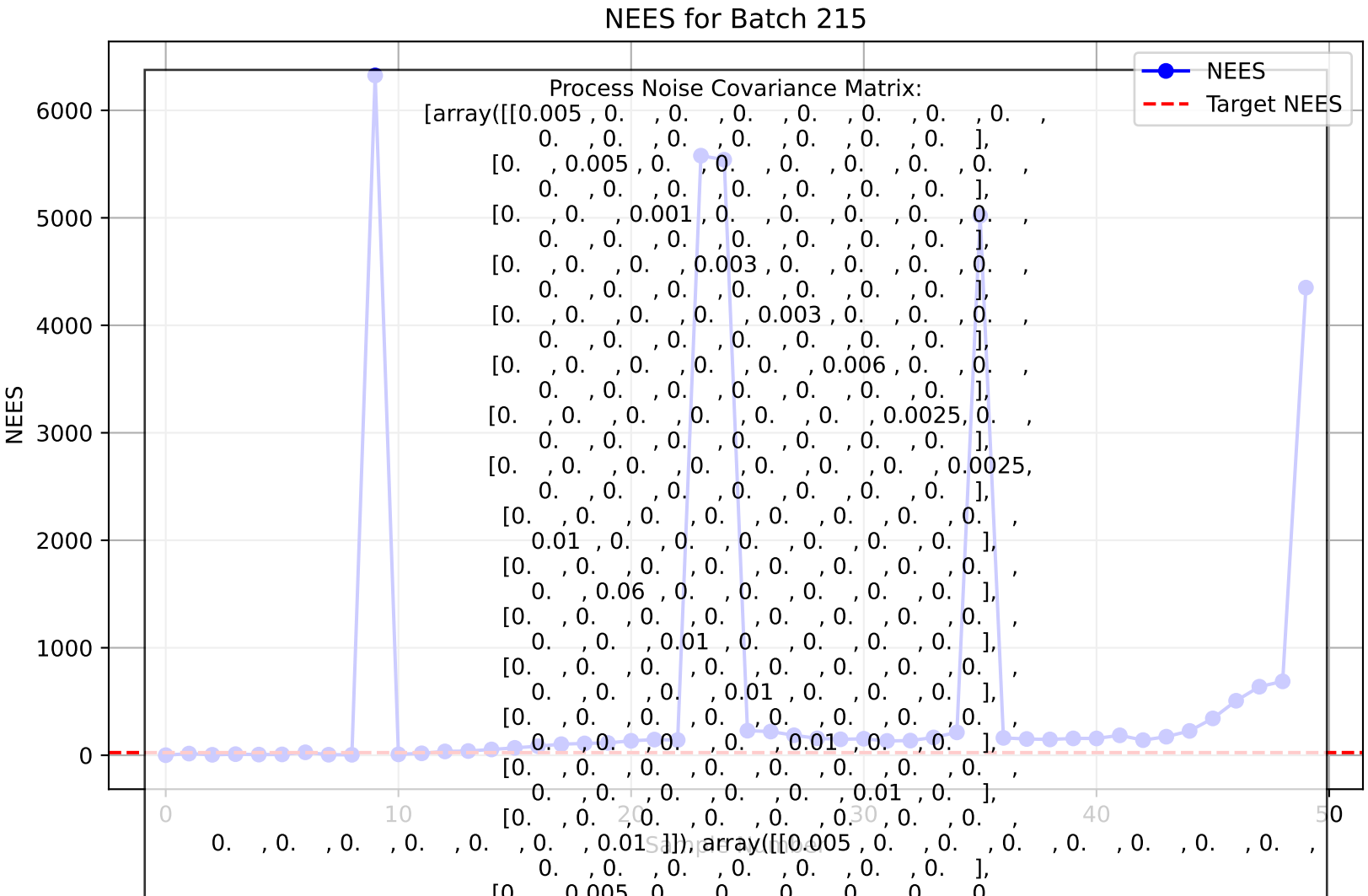

NEES for Batch 210
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.01 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
2500
2000
1500
1000
500
0
0
10
20
30
40
50

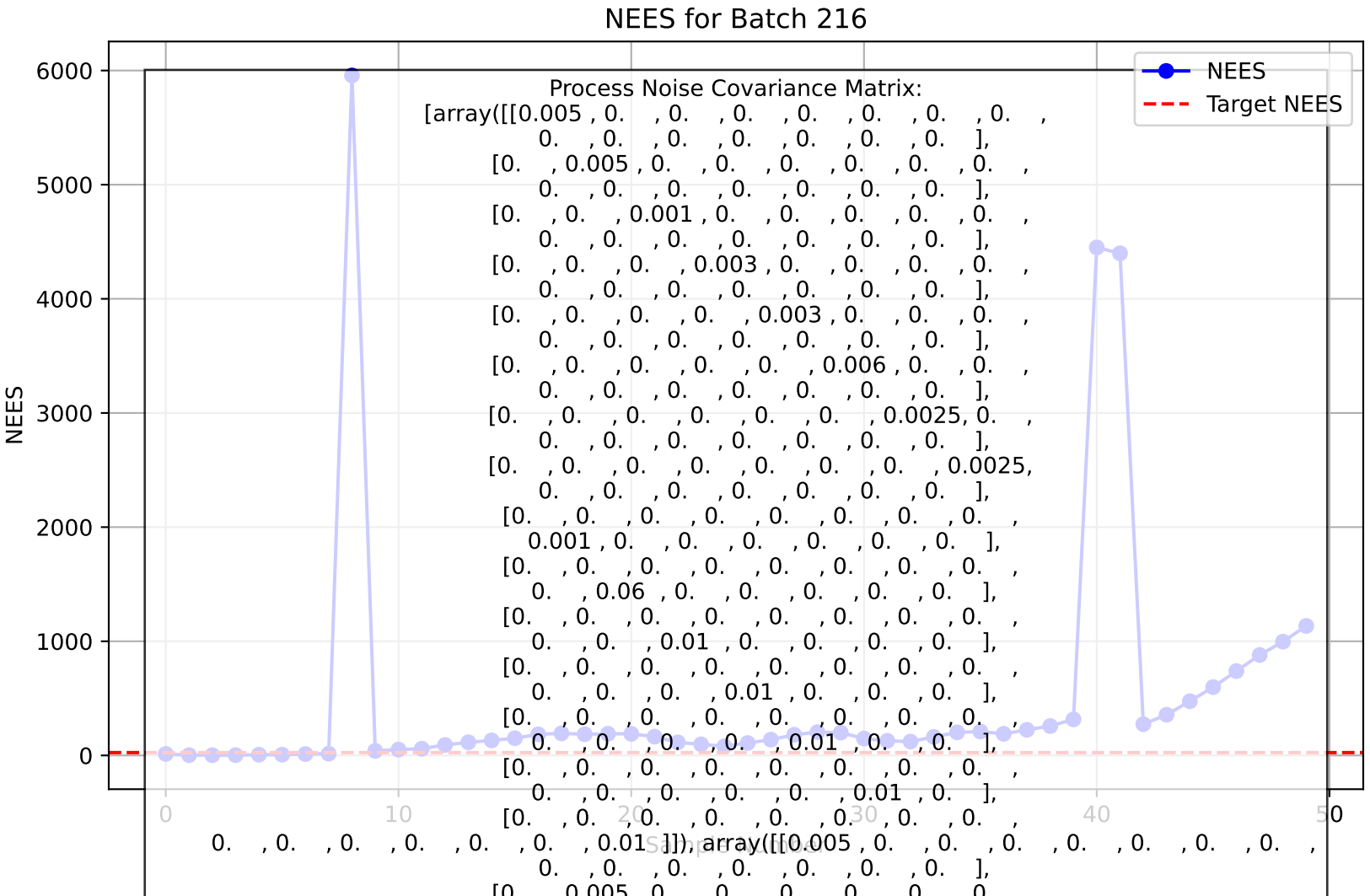

NEES for Batch 211
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600
700
800

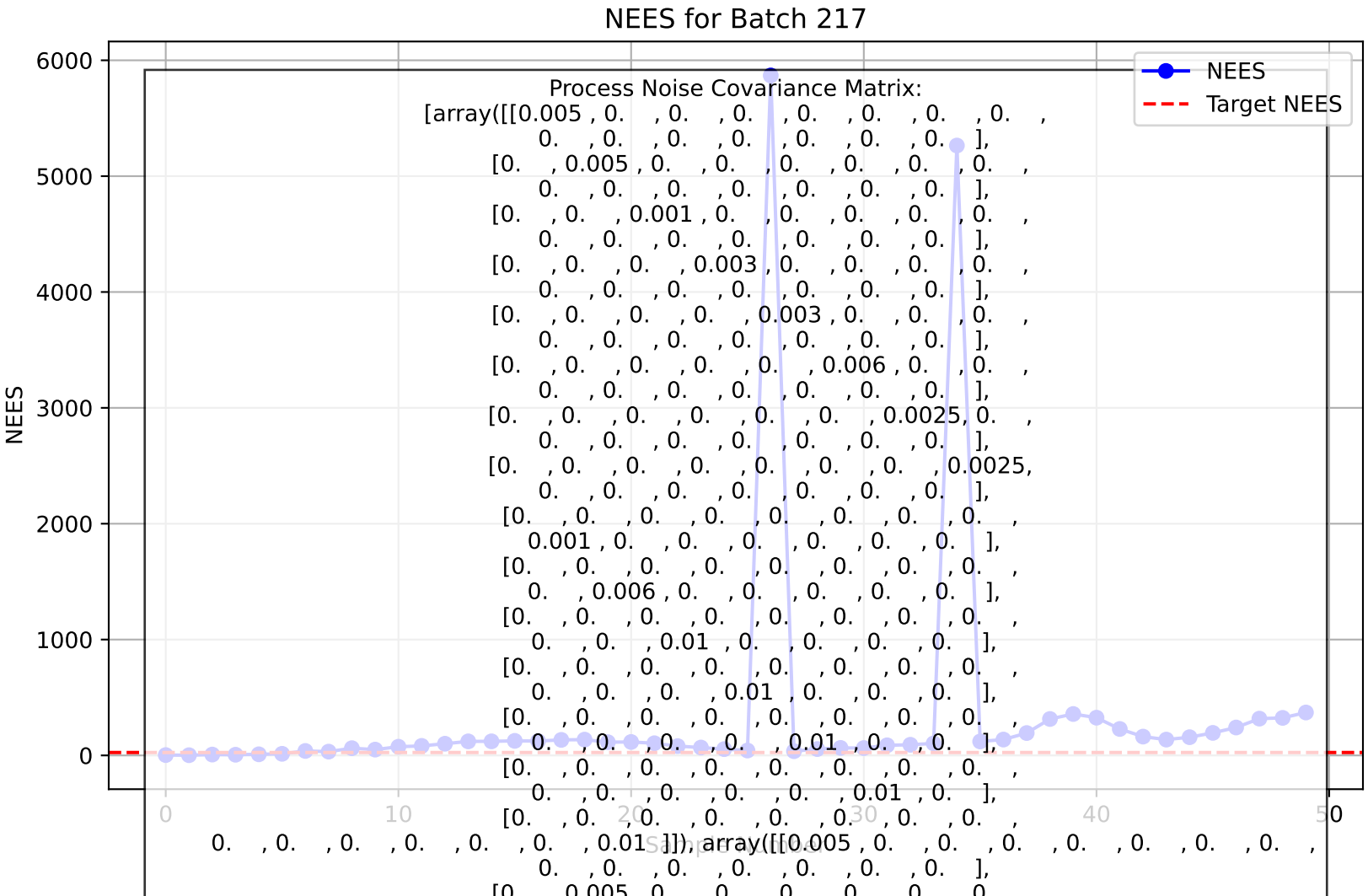

NEES for Batch 212
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
800
600
400
200
0
0
10
20
30
40
50

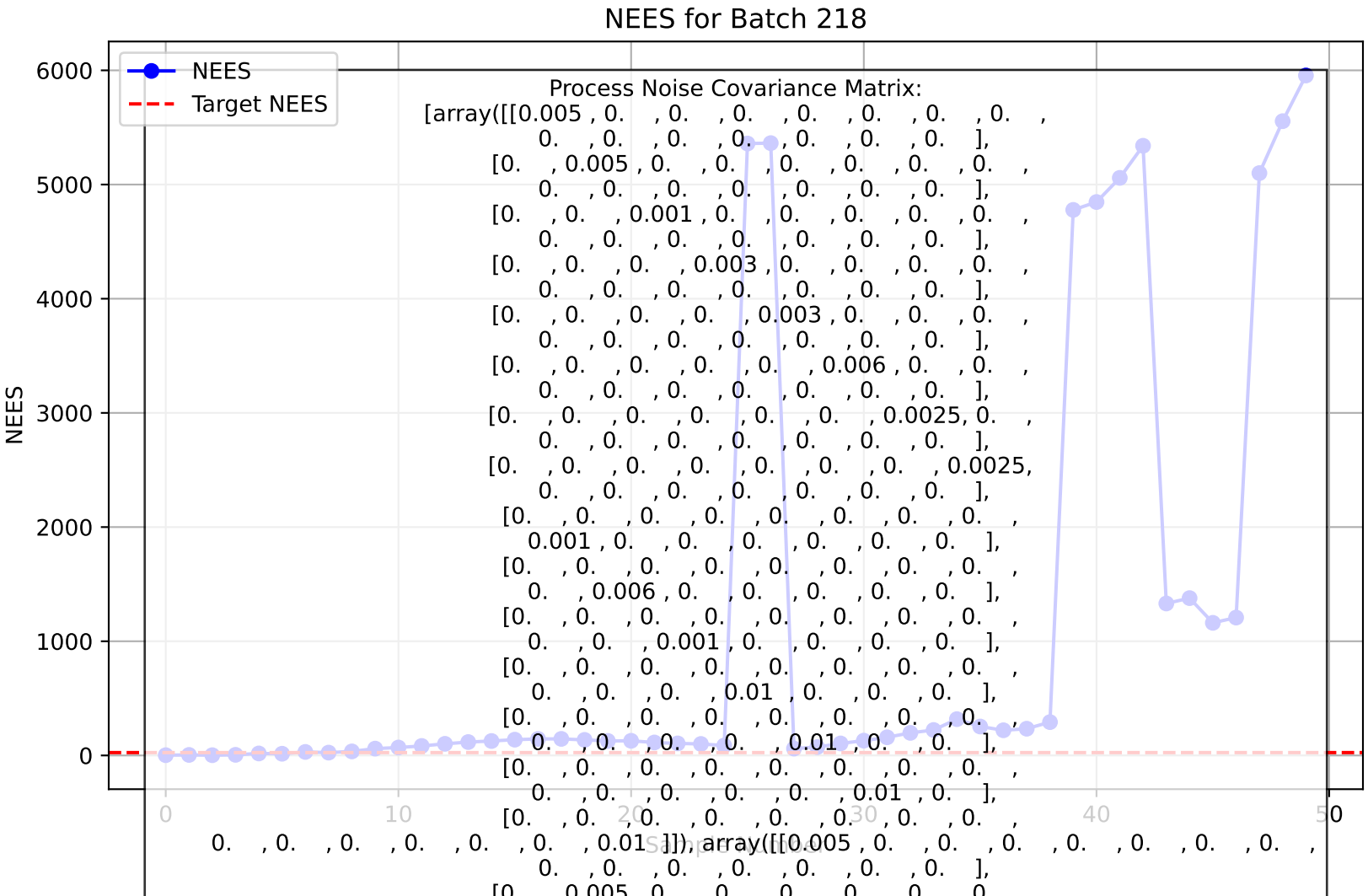

NEES for Batch 213
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
0
10
20
30
40
50
0
100
200
300
400
500
600

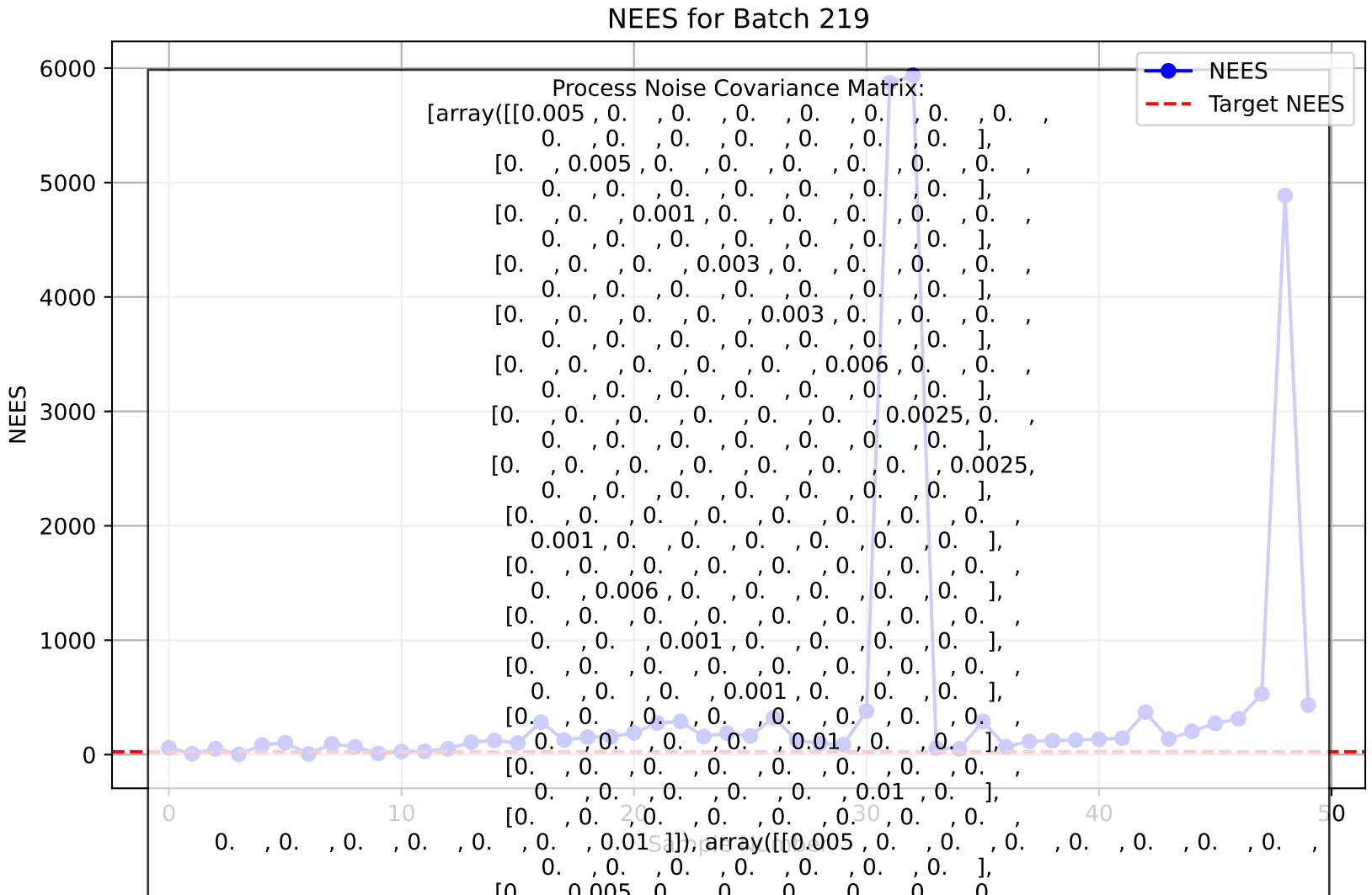

NEES for Batch 214
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Batch Number
0
1000
2000
3000
4000
5000
6000
0
10
20
30
40
50

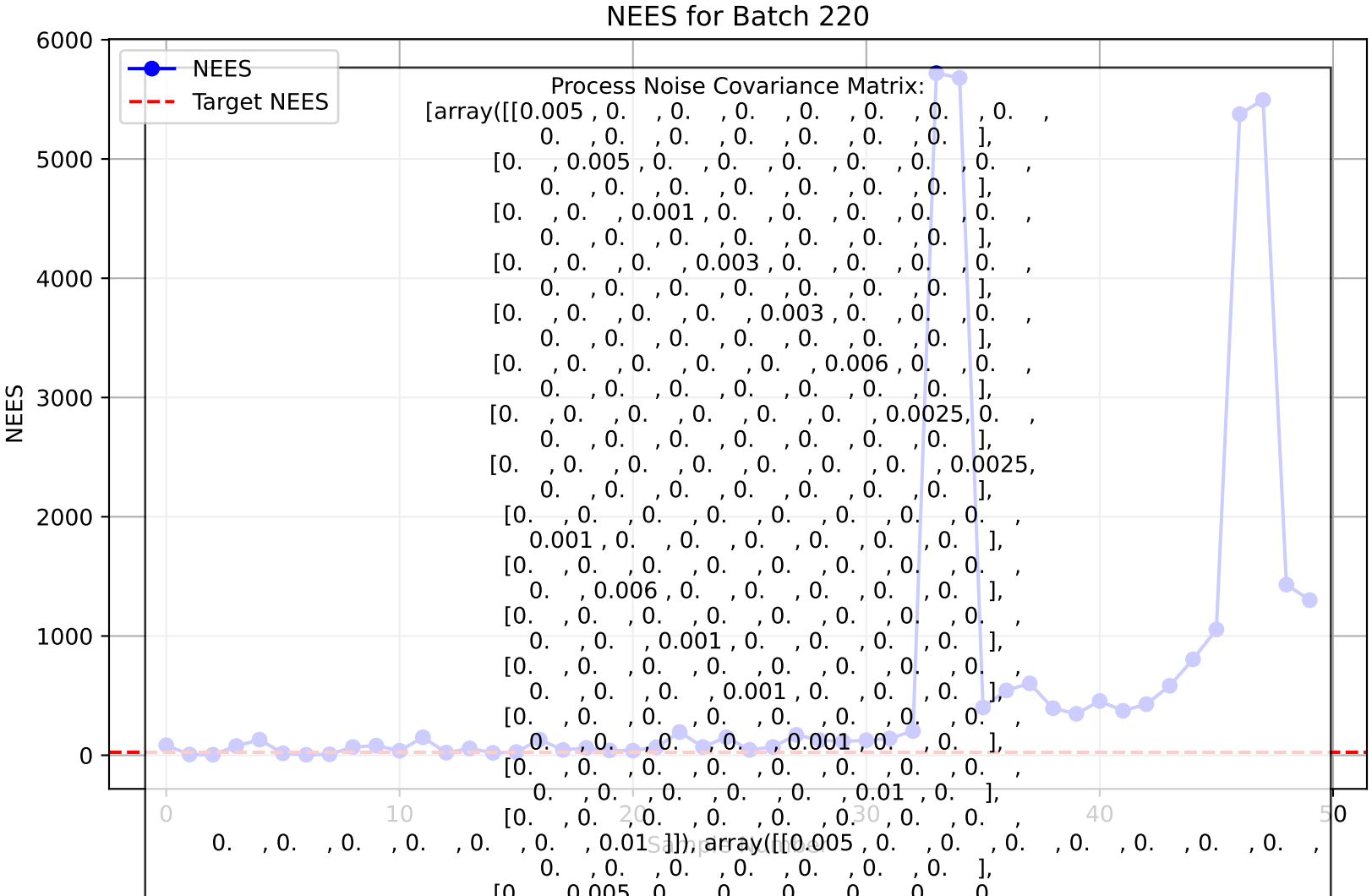

NEES for Batch 215
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
0
1000
2000
3000
4000
5000
6000
0
10
20
30
40
50
Sample

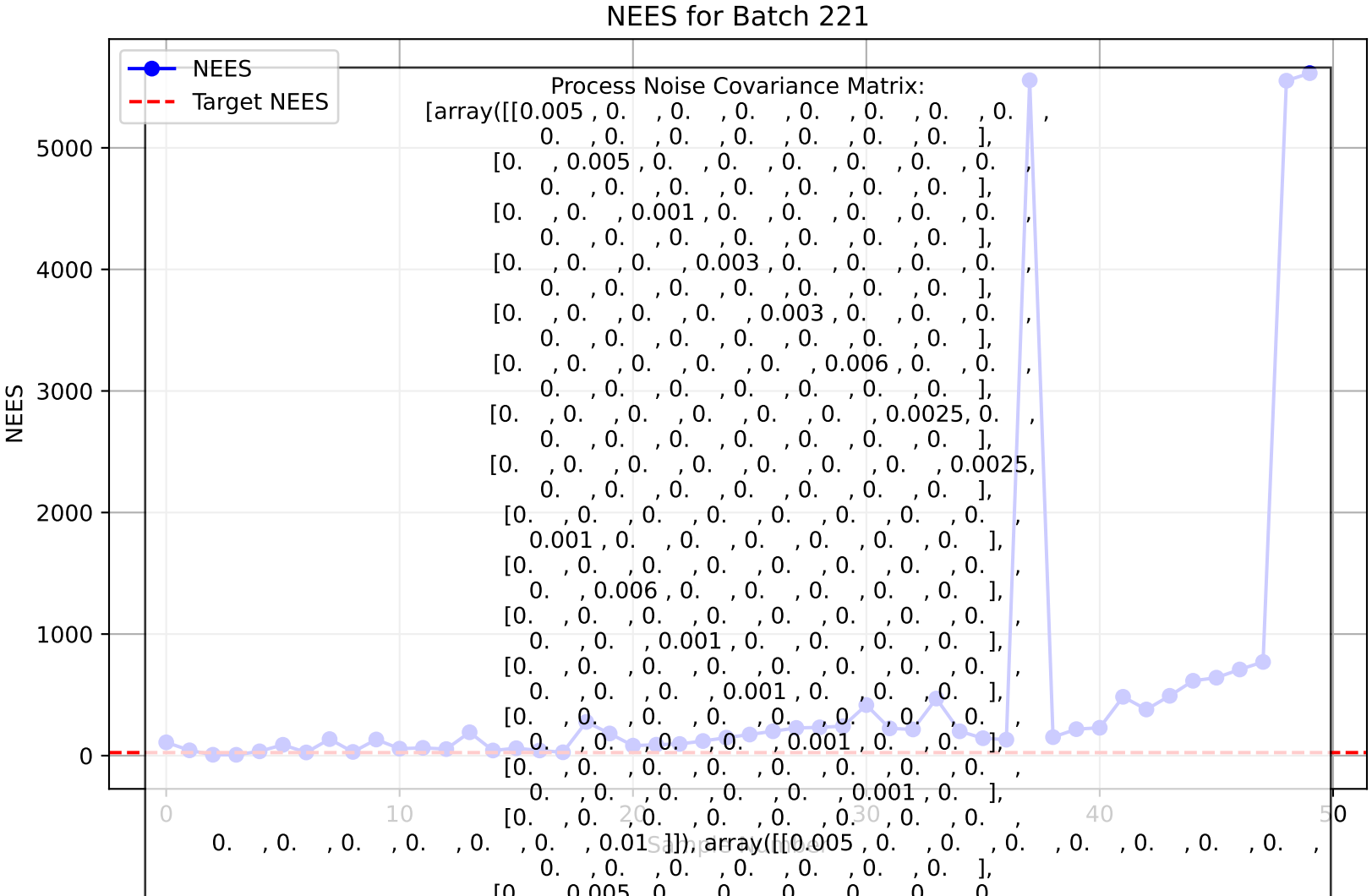

NEES for Batch 216
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
6000
5000
4000
3000
2000
1000
0
NEES
0
10
20
30
40
50
Sample

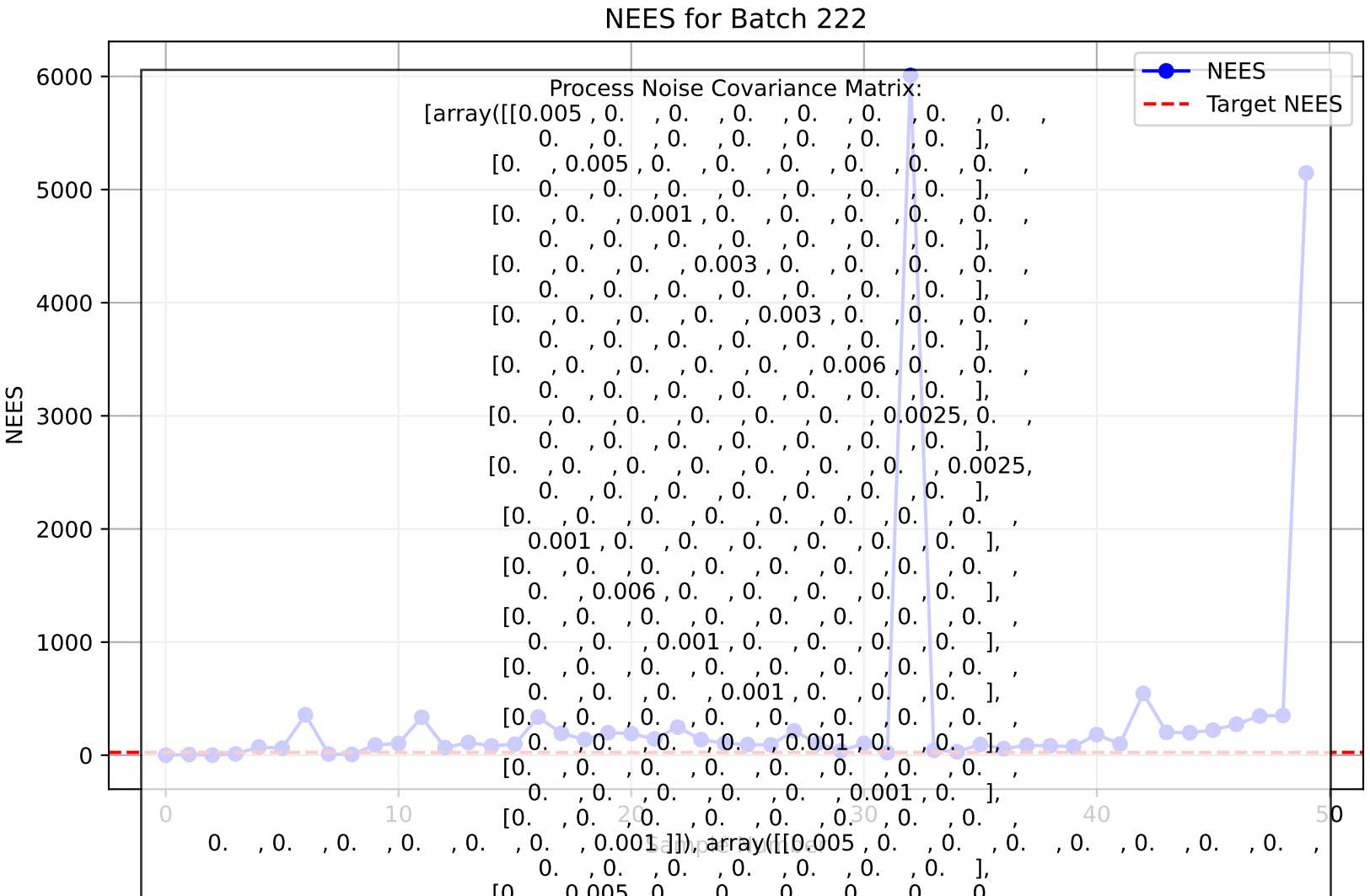

NEES for Batch 217
NEES
Target NEES
NEES
Sample
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,

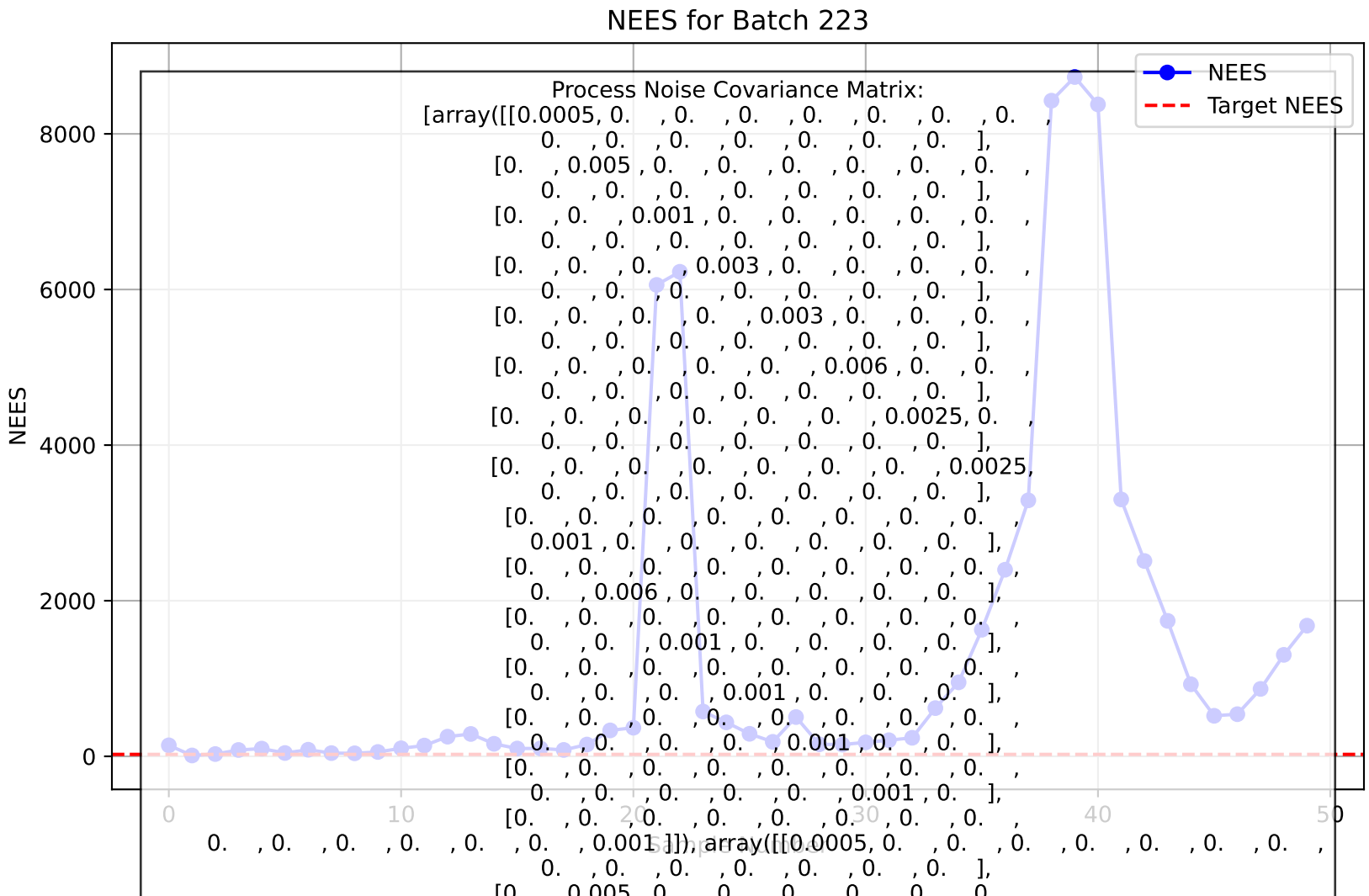

NEES for Batch 218
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
6000
5000
4000
3000
2000
1000
0
NEES
0
10
20
30
40
50
Sample

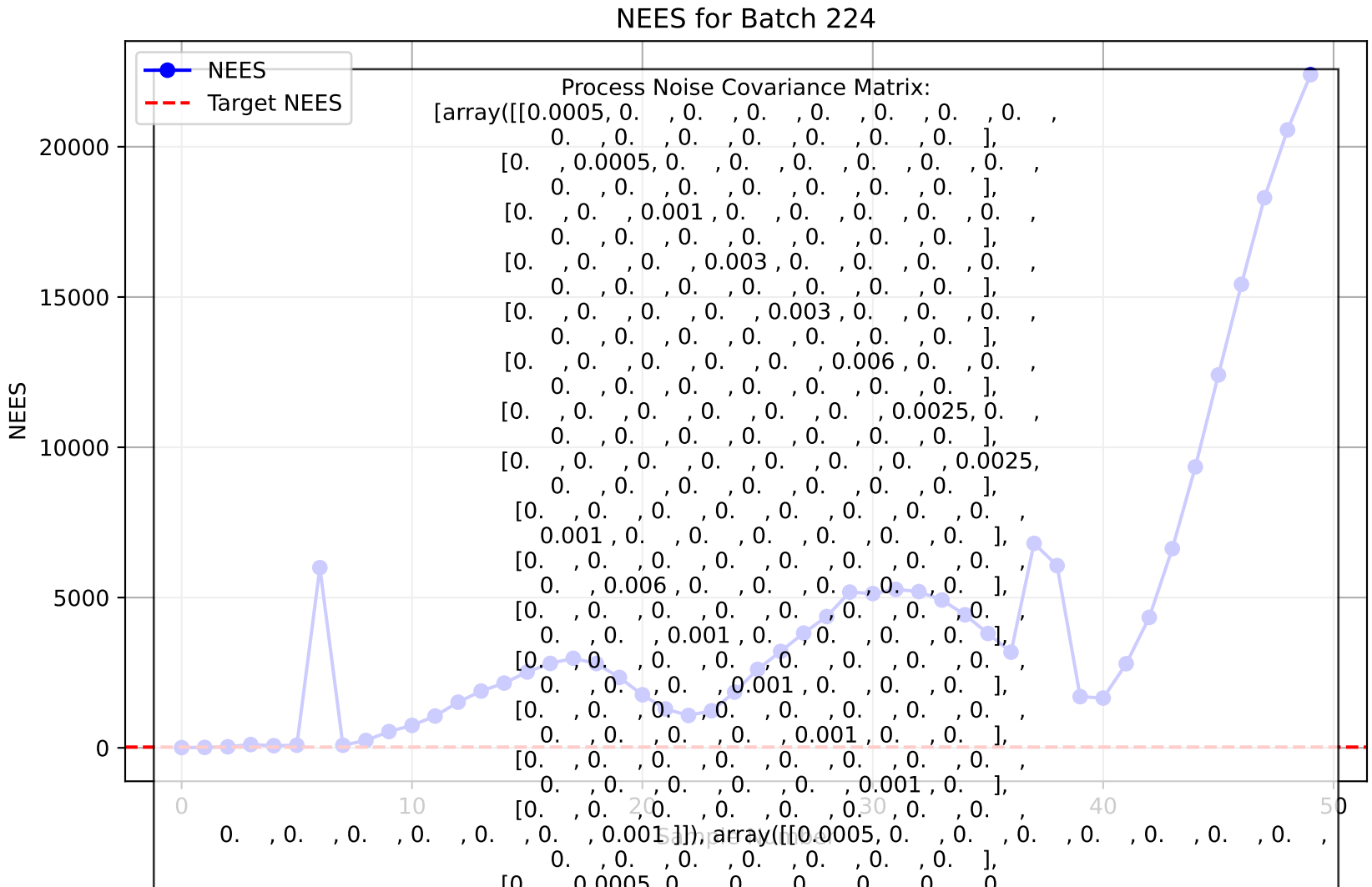

NEES for Batch 219
NEES
Target NEES
NEES
Sample
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.001 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,

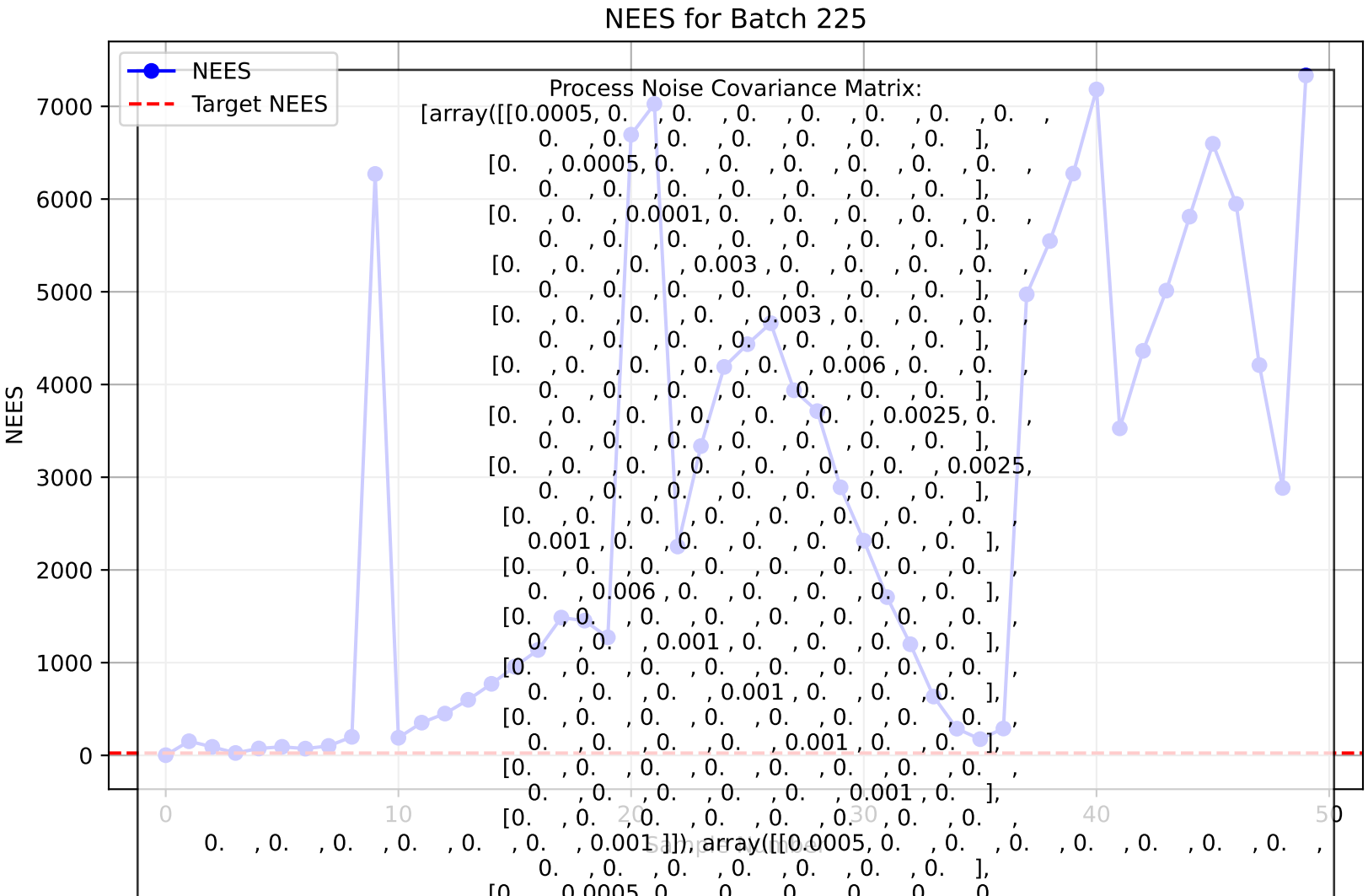

NEES for Batch 220
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.001 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.001 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample
0
10
20
30
40
50
0
1000
2000
3000
4000
5000
6000

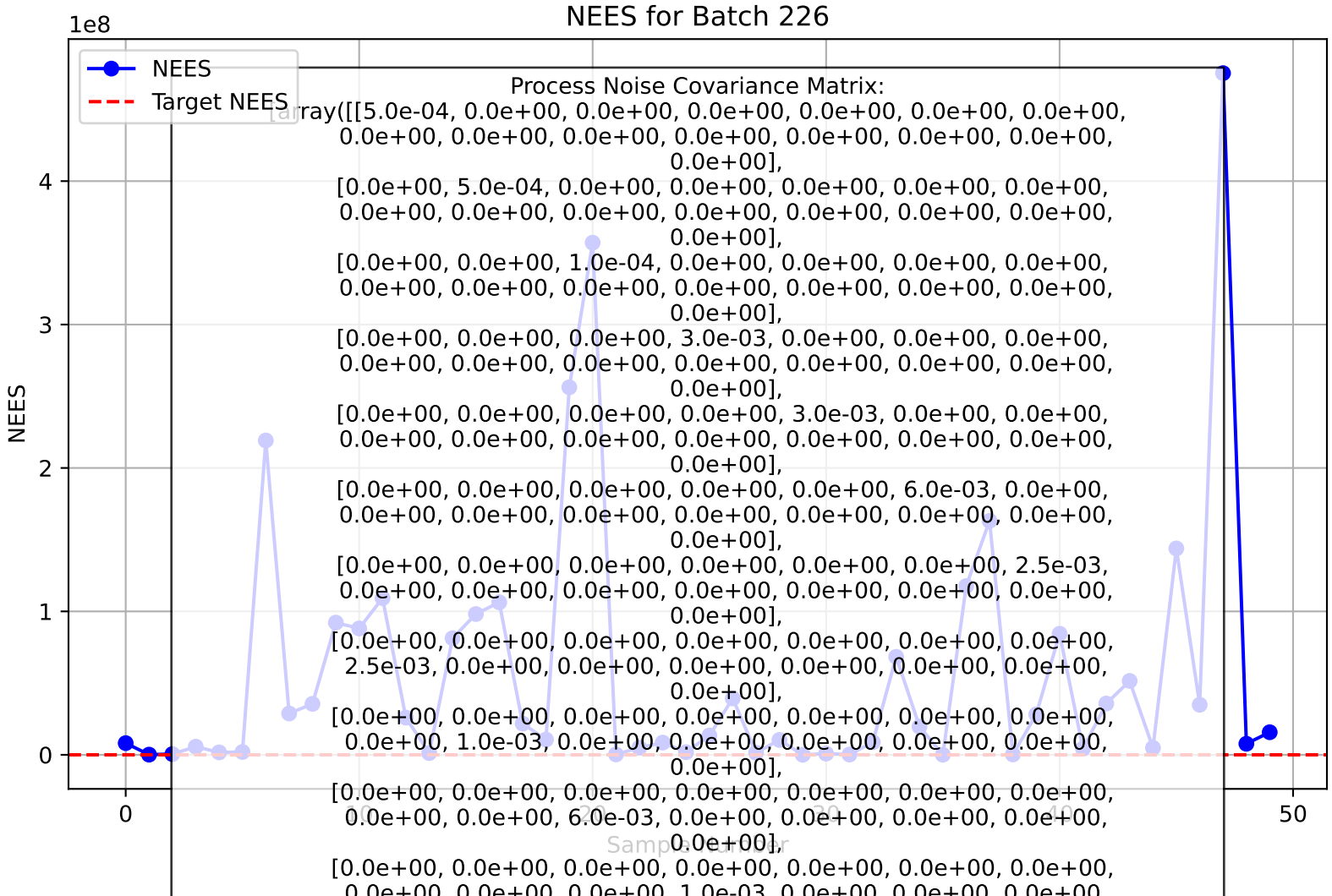

NEES for Batch 221
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.001 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.001 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.001 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
5000
4000
3000
2000
1000
0
0
10
20
30
40
50
Sample

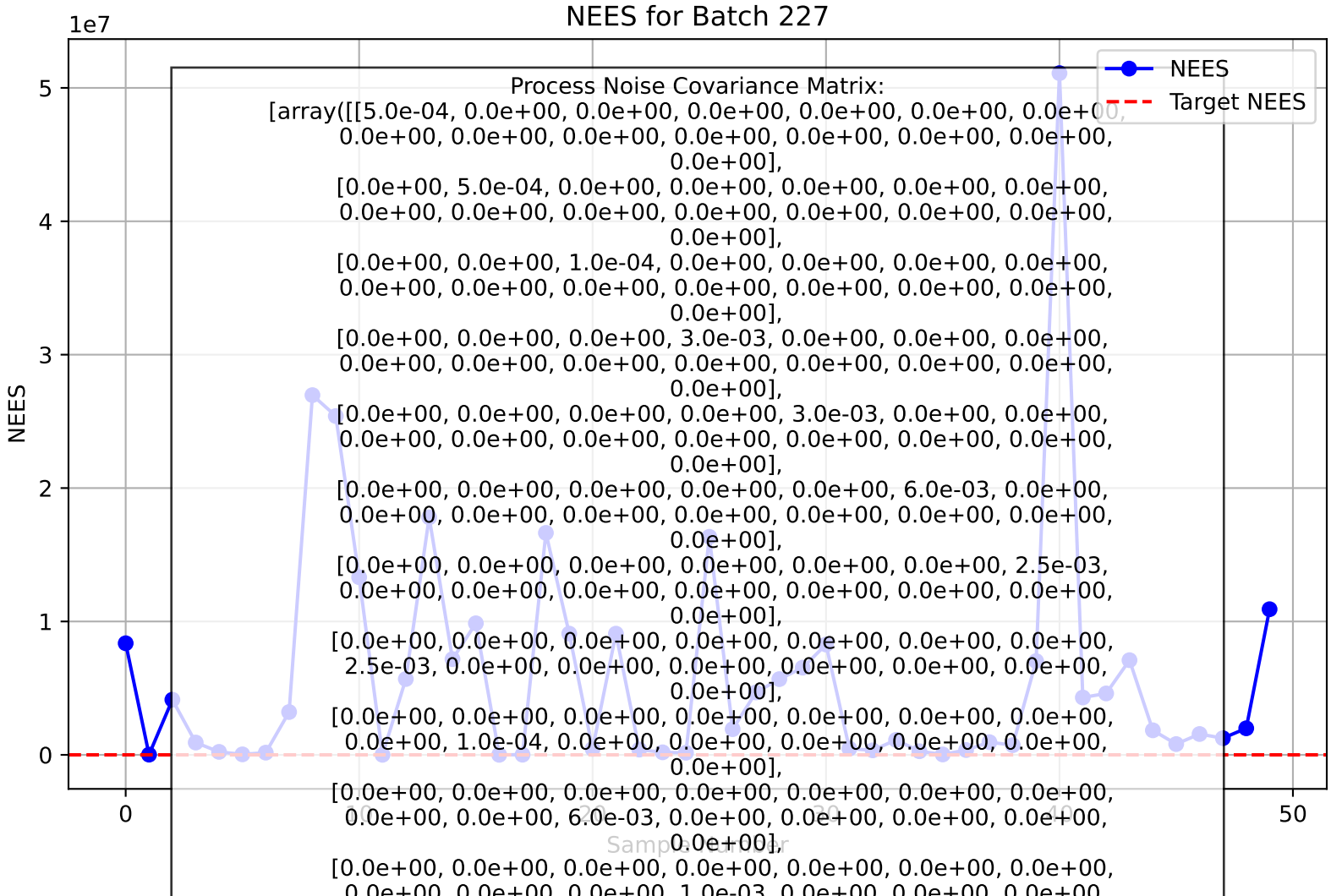

NEES for Batch 222
NEES
Target NEES
NEES
Batch Number
6000
5000
4000
3000
2000
1000
0
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.001 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.001 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.001 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.001]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,

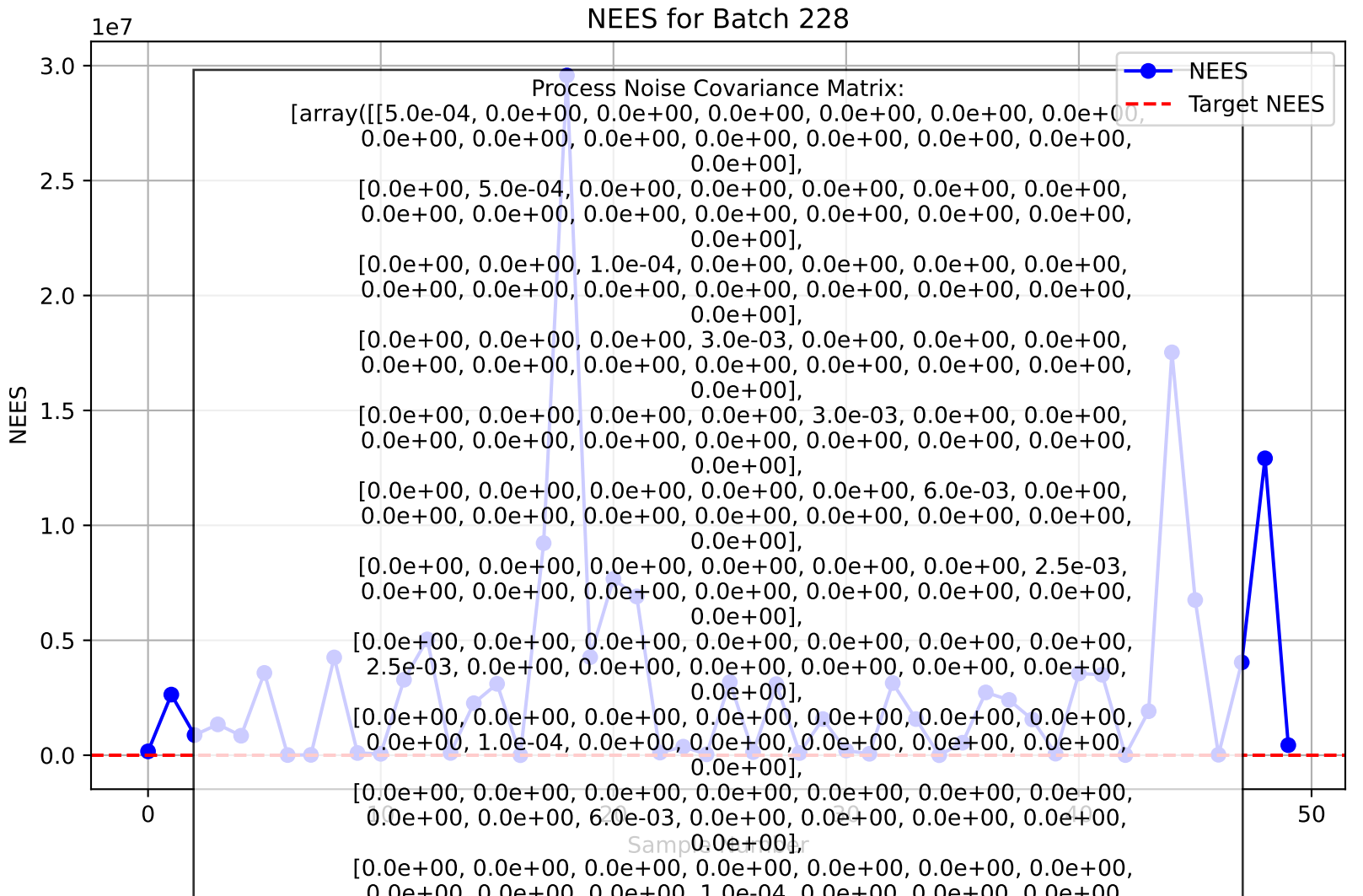

NEES for Batch 223
NEES
Target NEES
NEES
Sample Index
0
2000
4000
6000
8000
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.0005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.001 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.001 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.001 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.001]]), array([[0.0005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,

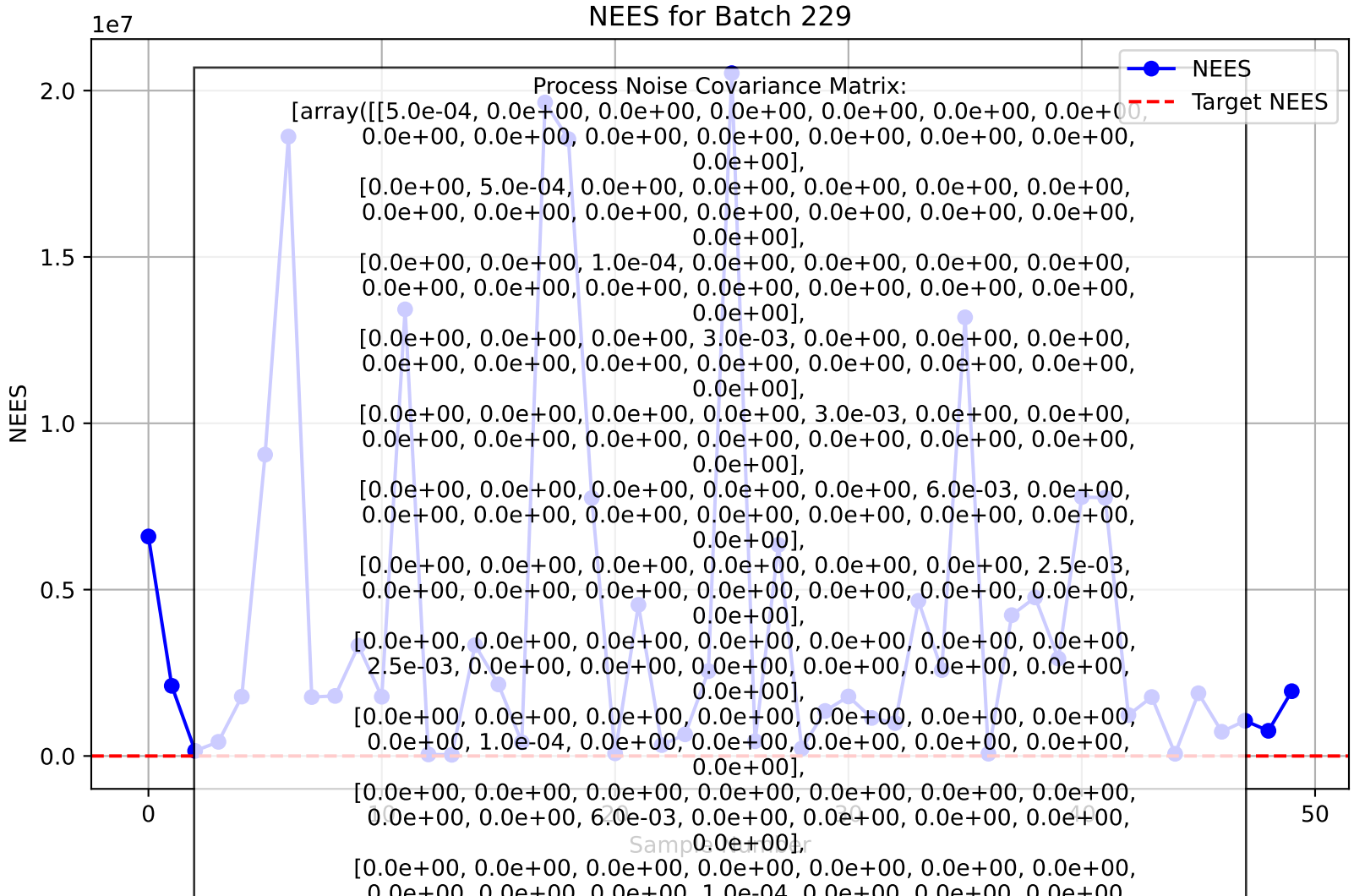

NEES for Batch 224
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.0005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.0005, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.001 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.001 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.001 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.001]]), array([[0.0005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.0005, 0. , 0. , 0. , 0. , 0. ,
NEES
20000
15000
10000
5000
0
0
10
20
30
40
50
Sample Index

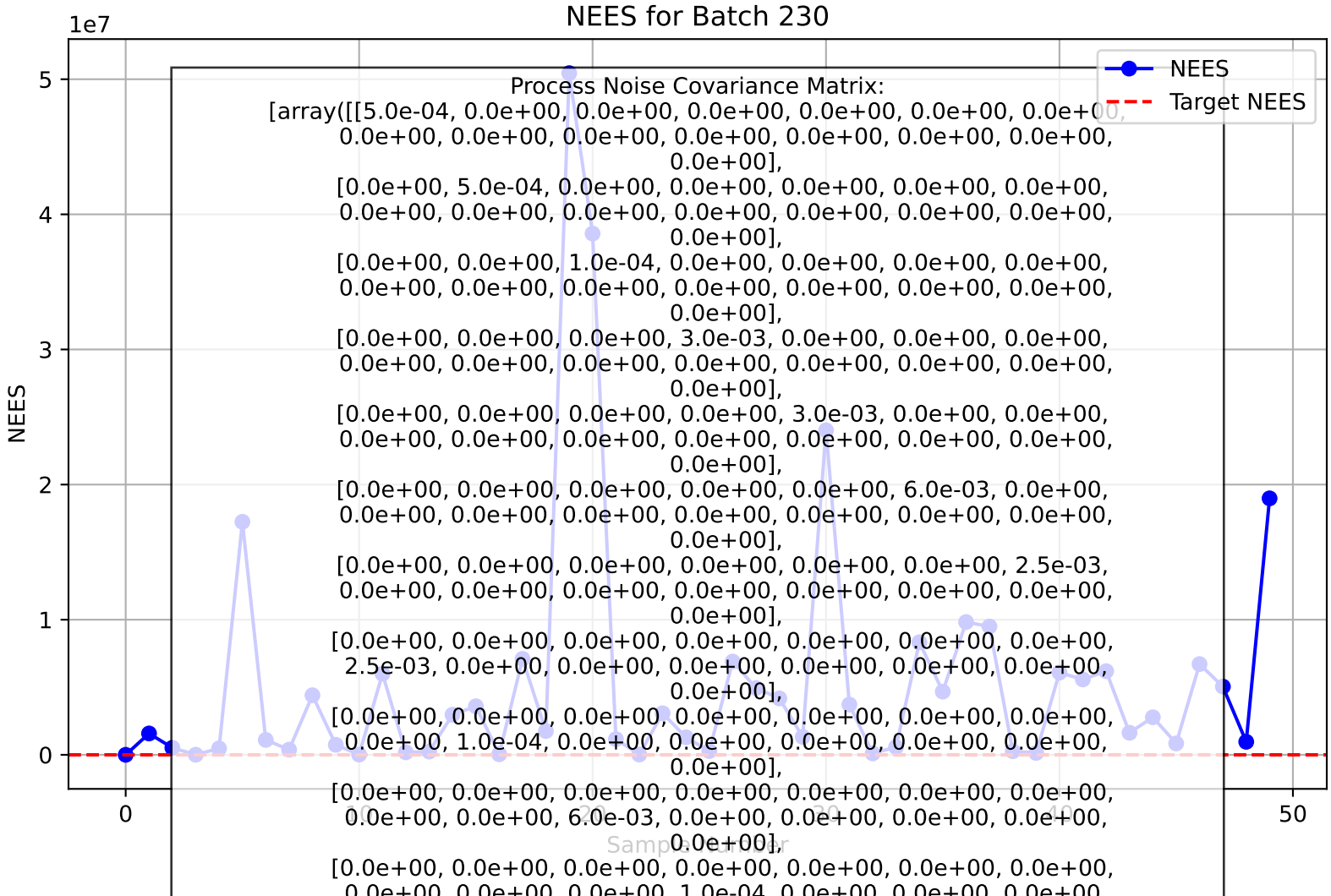

NEES for Batch 225
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.0005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.0005, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.0001, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.006 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.0025, 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.0025,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.001 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.006 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.001 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.001 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.001 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.001 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.001]]), array([[0.0005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.0005, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
NEES
Sample
0
1000
2000
3000
4000
5000
6000
7000
0
10
20
30
40
50

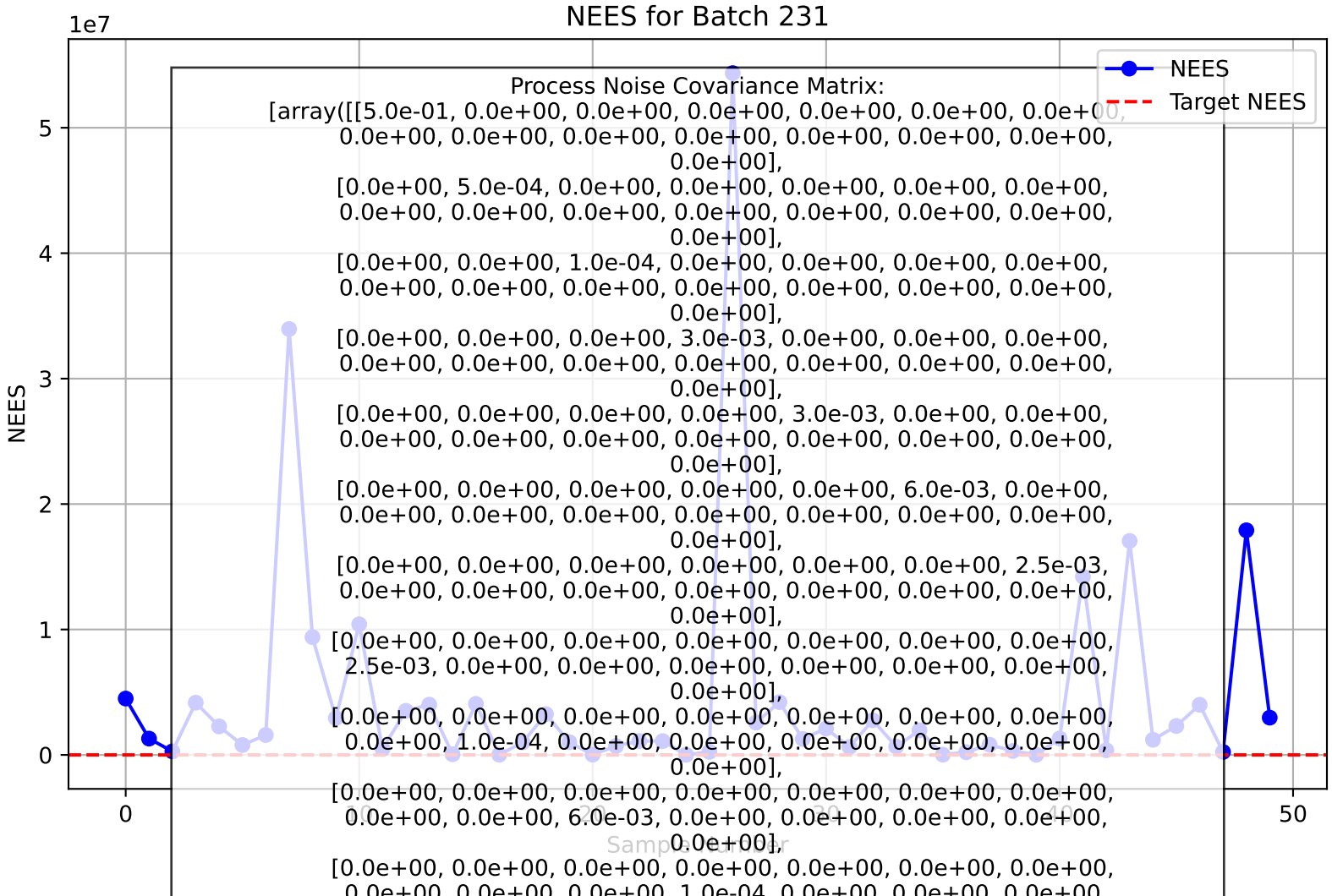

NEES for Batch 226
1e8
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-03,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
0
1
2
3
4
0
50

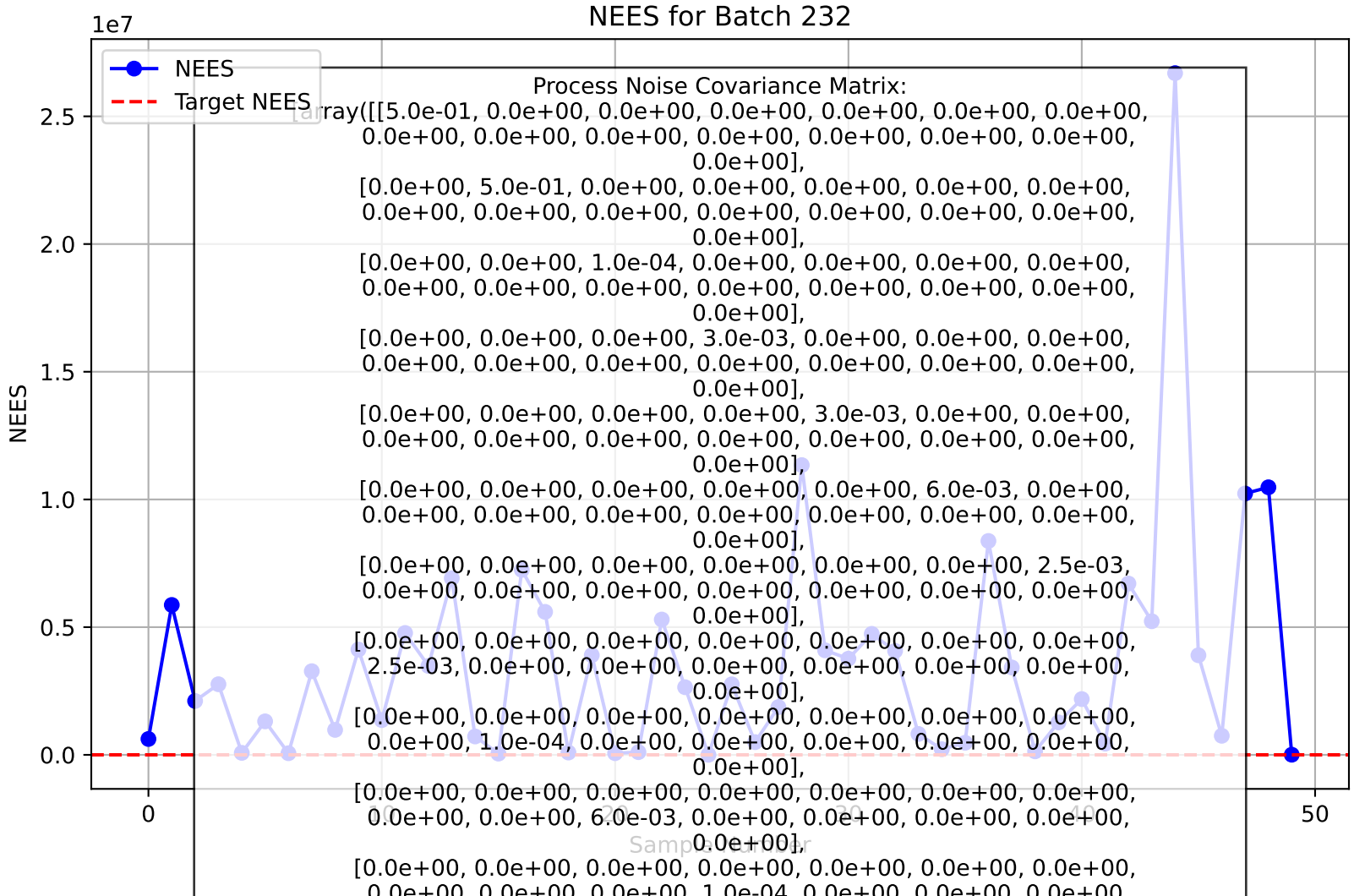

NEES for Batch 227
1e7
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-03,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
Sample Number
0
1
2
3
4
5
0
50

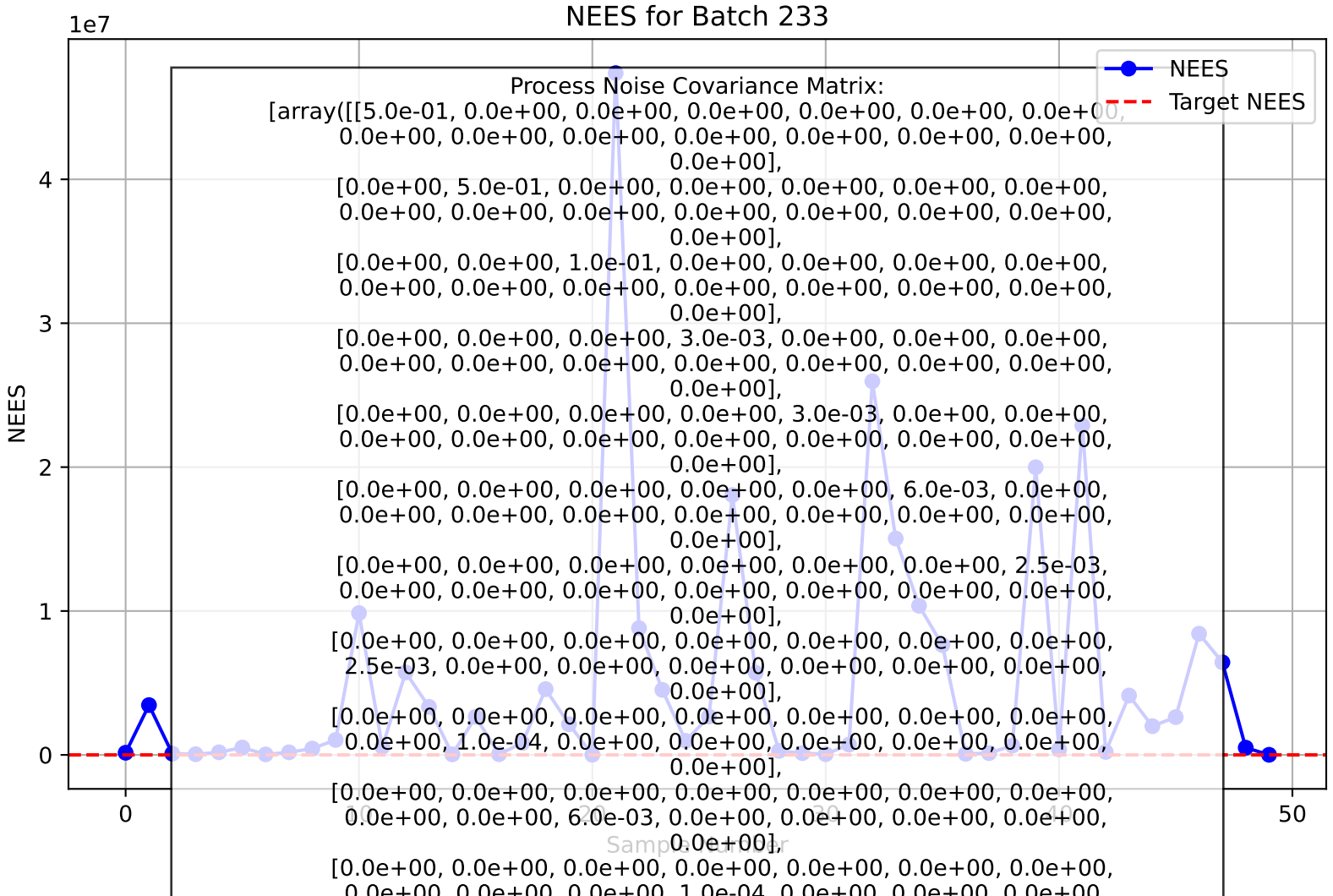

NEES for Batch 228
1e7
NEES
Target NEES
NEES
Sample Number
Process Noise Covariance Matrix:
[array([[5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-03,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,

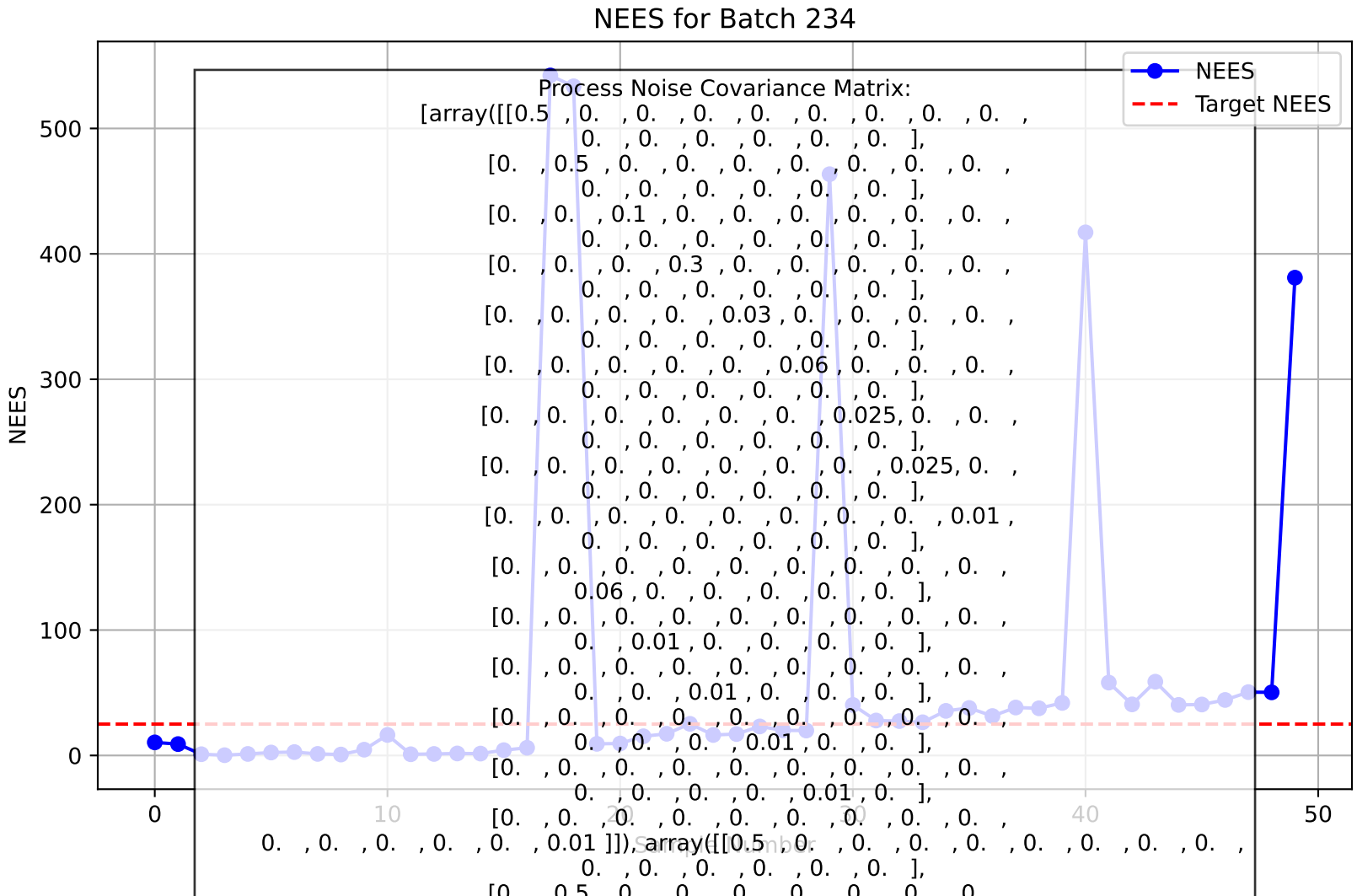

NEES for Batch 229
1e7
NEES
Target NEES
NEES
Sample Number
2.0
1.5
1.0
0.5
0.0
0
50
Process Noise Covariance Matrix:
[array([[5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-03,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,

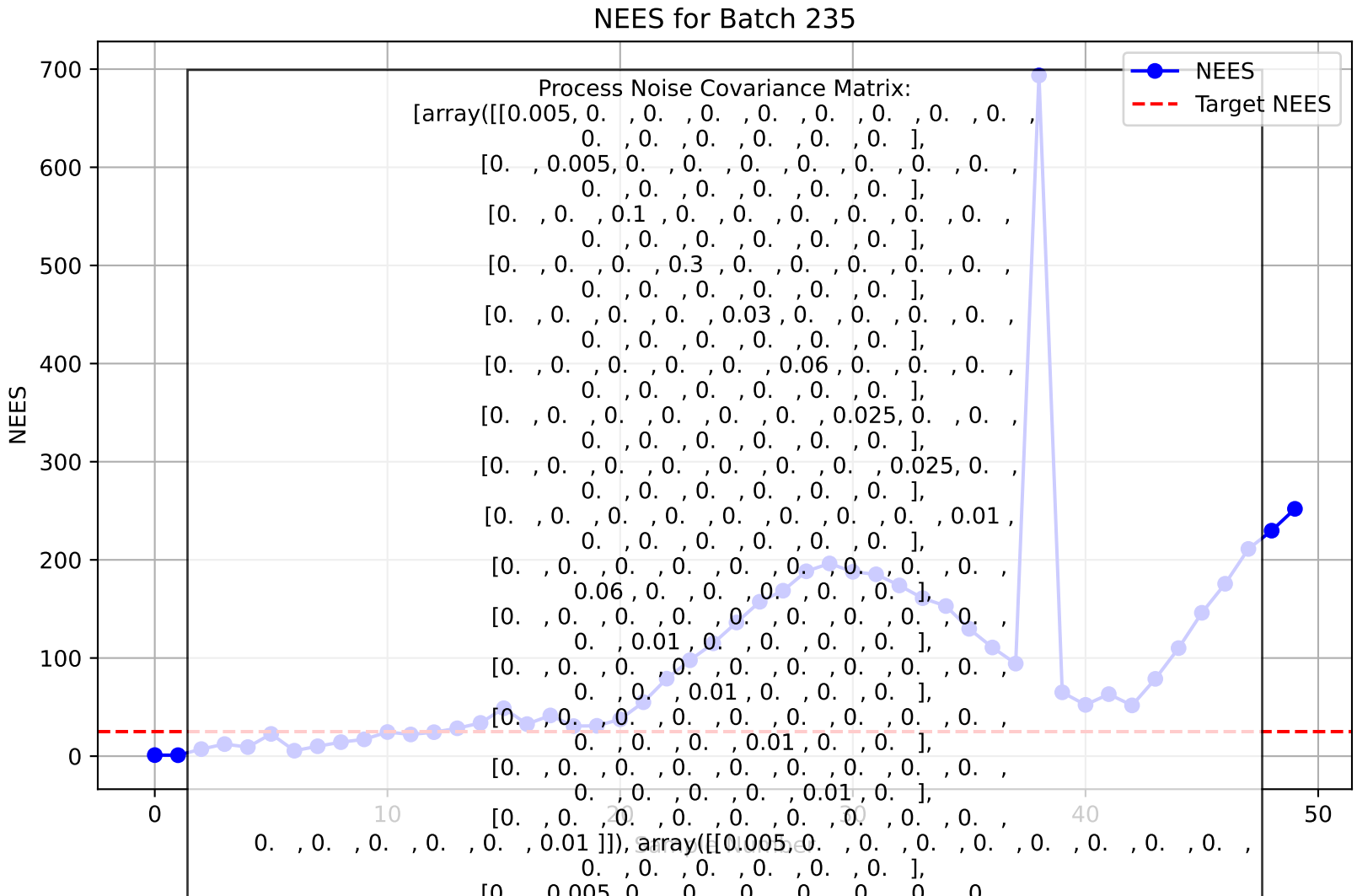

NEES for Batch 230
1e7
NEES
Target NEES
NEES
Sample Number
0
1
2
3
4
5
0
50
Process Noise Covariance Matrix:
[array([[5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-03,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,

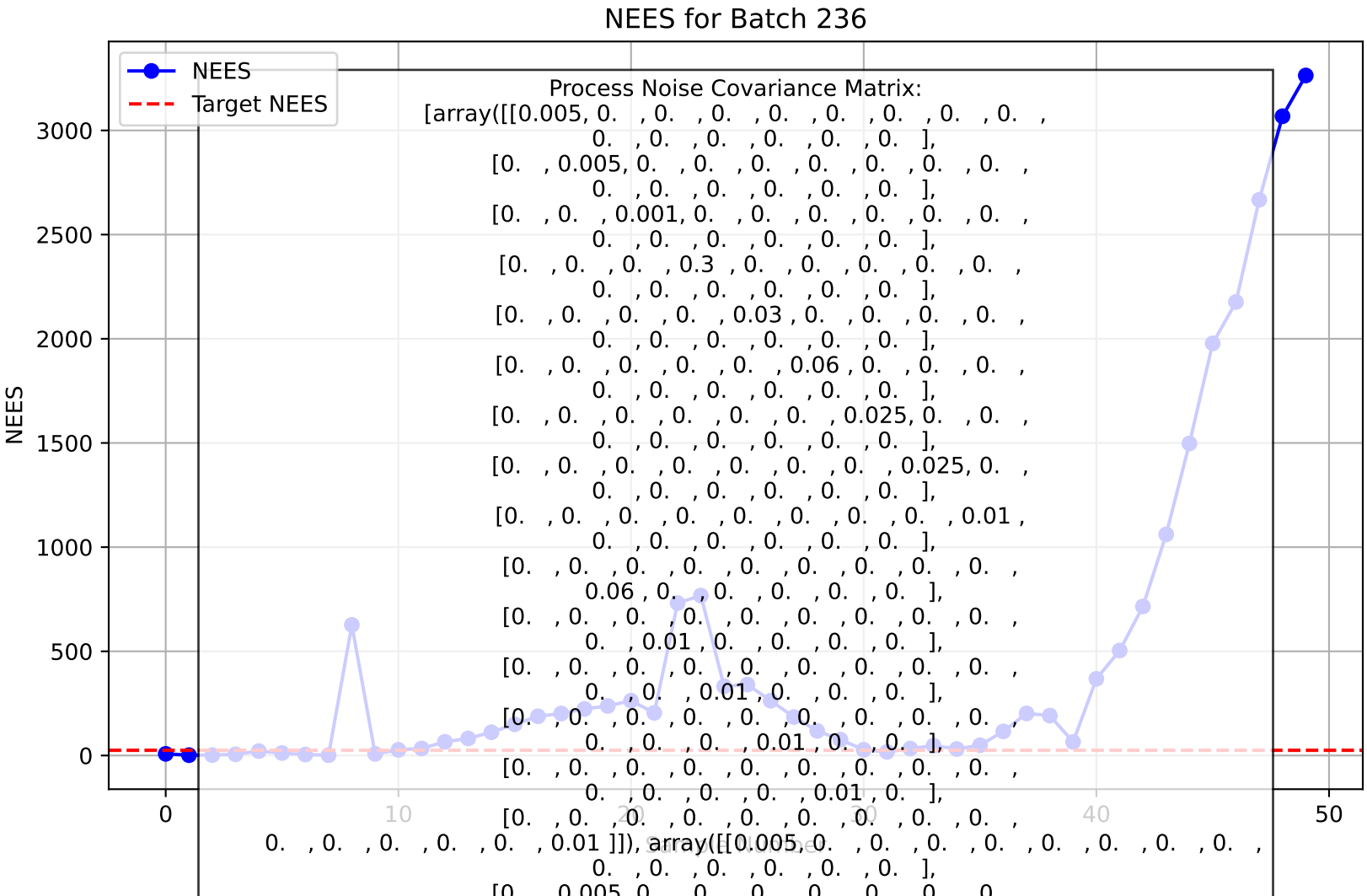

NEES for Batch 231
1e7
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[5.0e-01, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-03,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
0
1
2
3
4
5
0
50
Sample Number

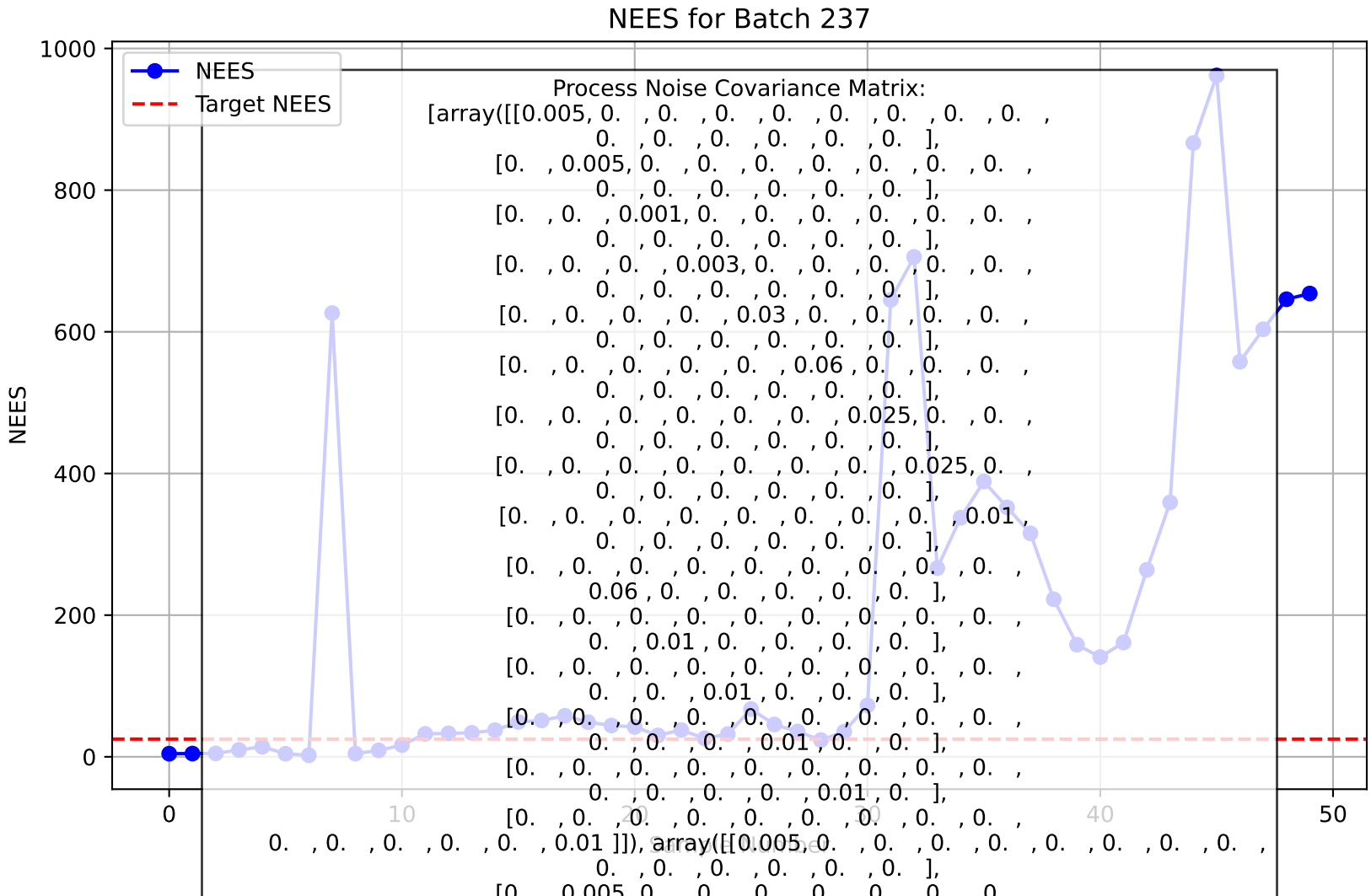

NEES for Batch 232
1e7
NEES
Target NEES
Process Noise Covariance Matrix:
array([[5.0e-01, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-01, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-03,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,
NEES
2.5
2.0
1.5
1.0
0.5
0.0
0
50

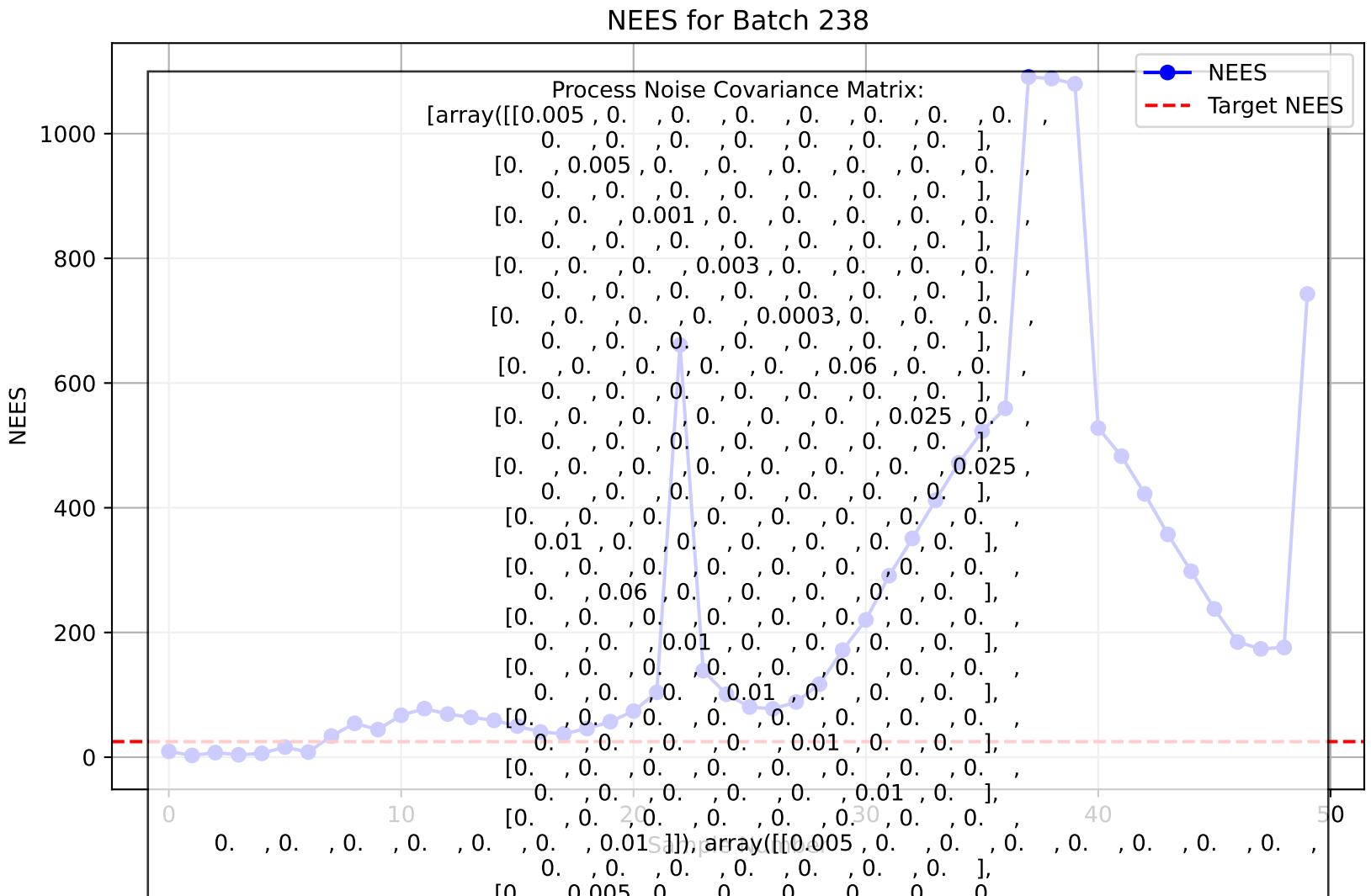

NEES for Batch 233
1e7
NEES
Target NEES
NEES
Sample Number
0
1
2
3
4
0
50
Process Noise Covariance Matrix:
[array([[5.0e-01, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-01, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-01, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-03, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-03,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-03, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,

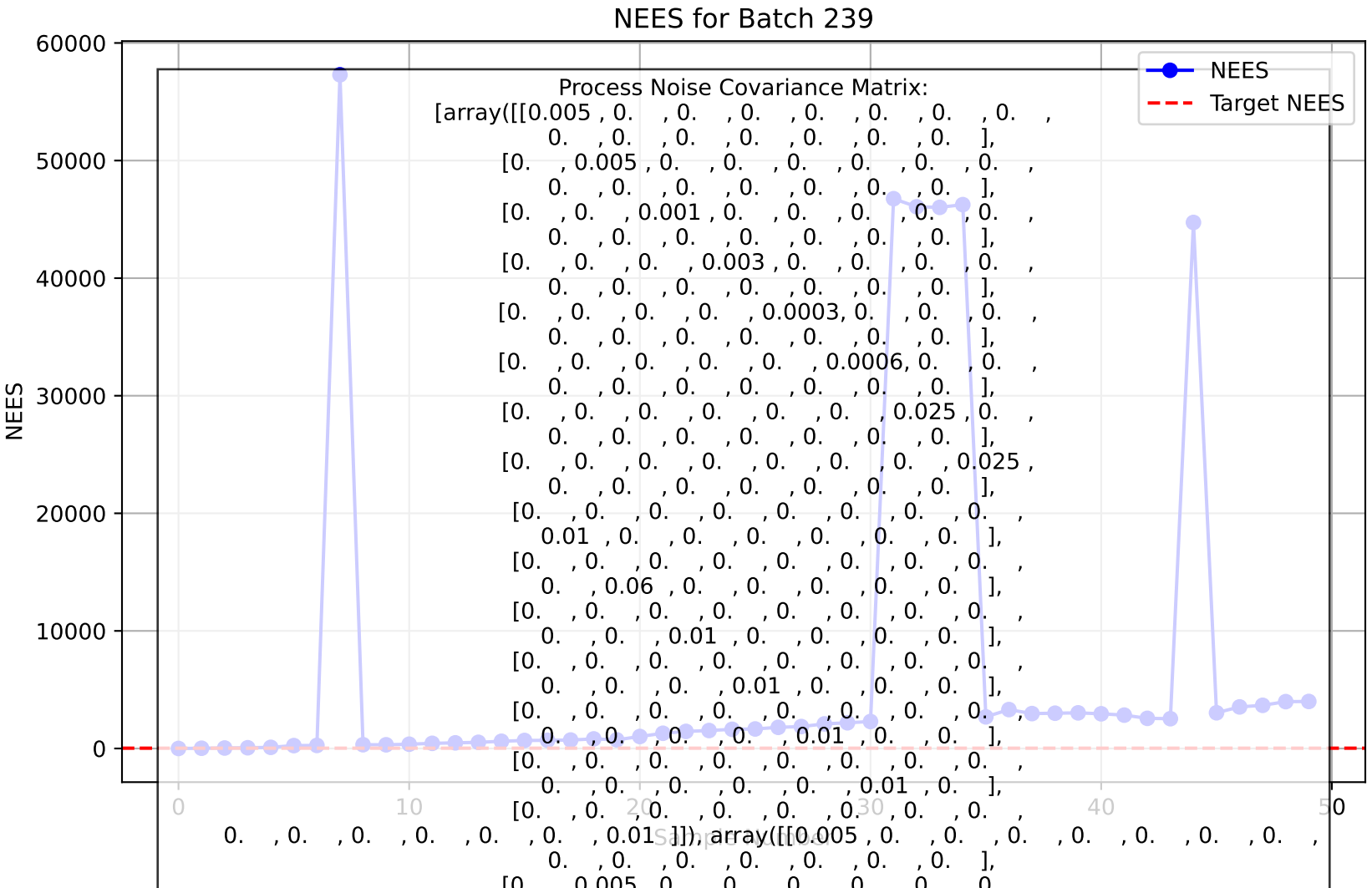

NEES for Batch 234
NEES
Target NEES
NEES
Sample Number
0
100
200
300
400
500
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.5 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.5 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.1 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.3 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.5 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.5 , 0. , 0. , 0. , 0. , 0. , 0. ,

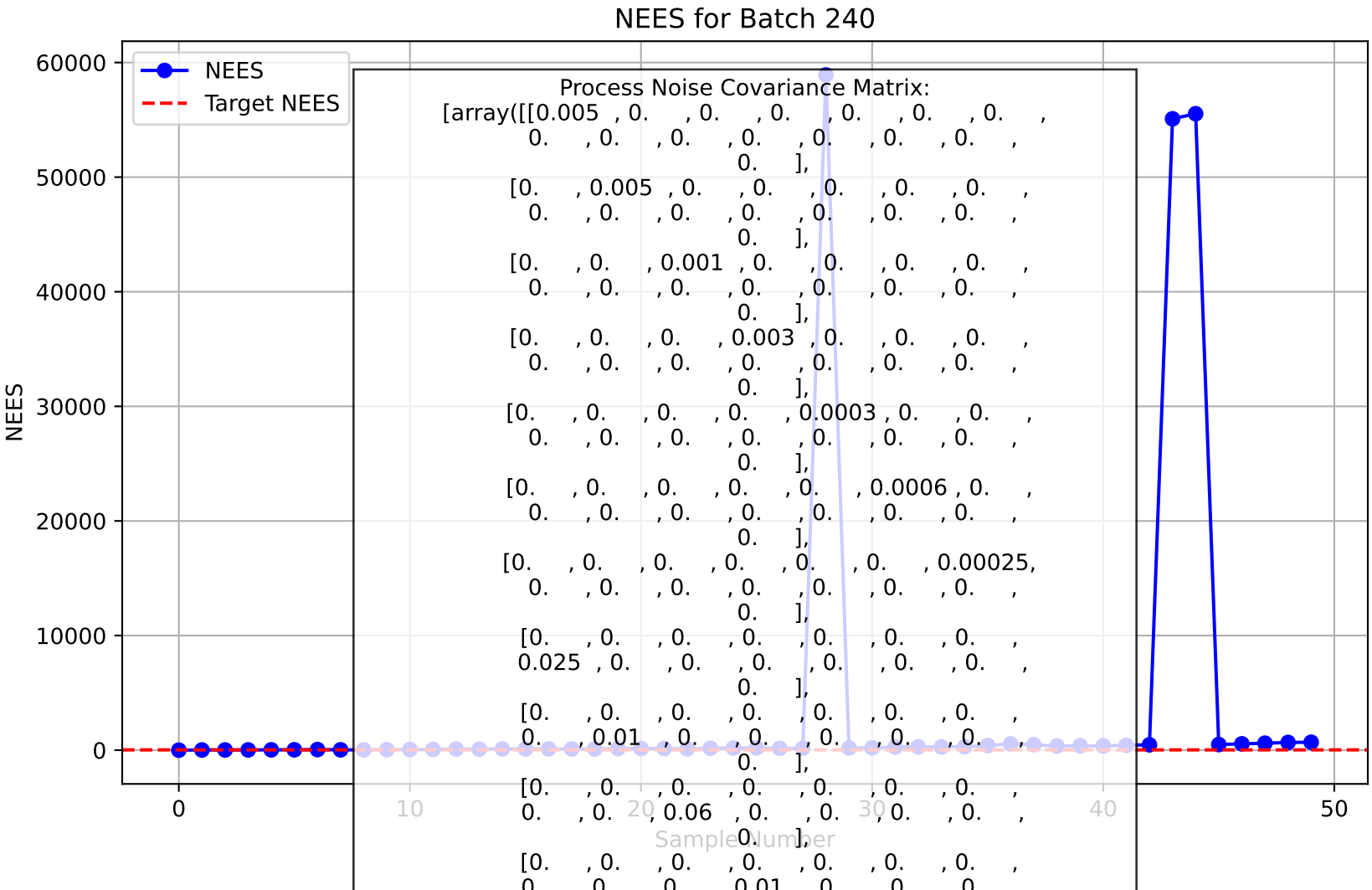

NEES for Batch 235
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.1 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.3 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
0
10
20
30
40
50
0
100
200
300
400
500
600
700

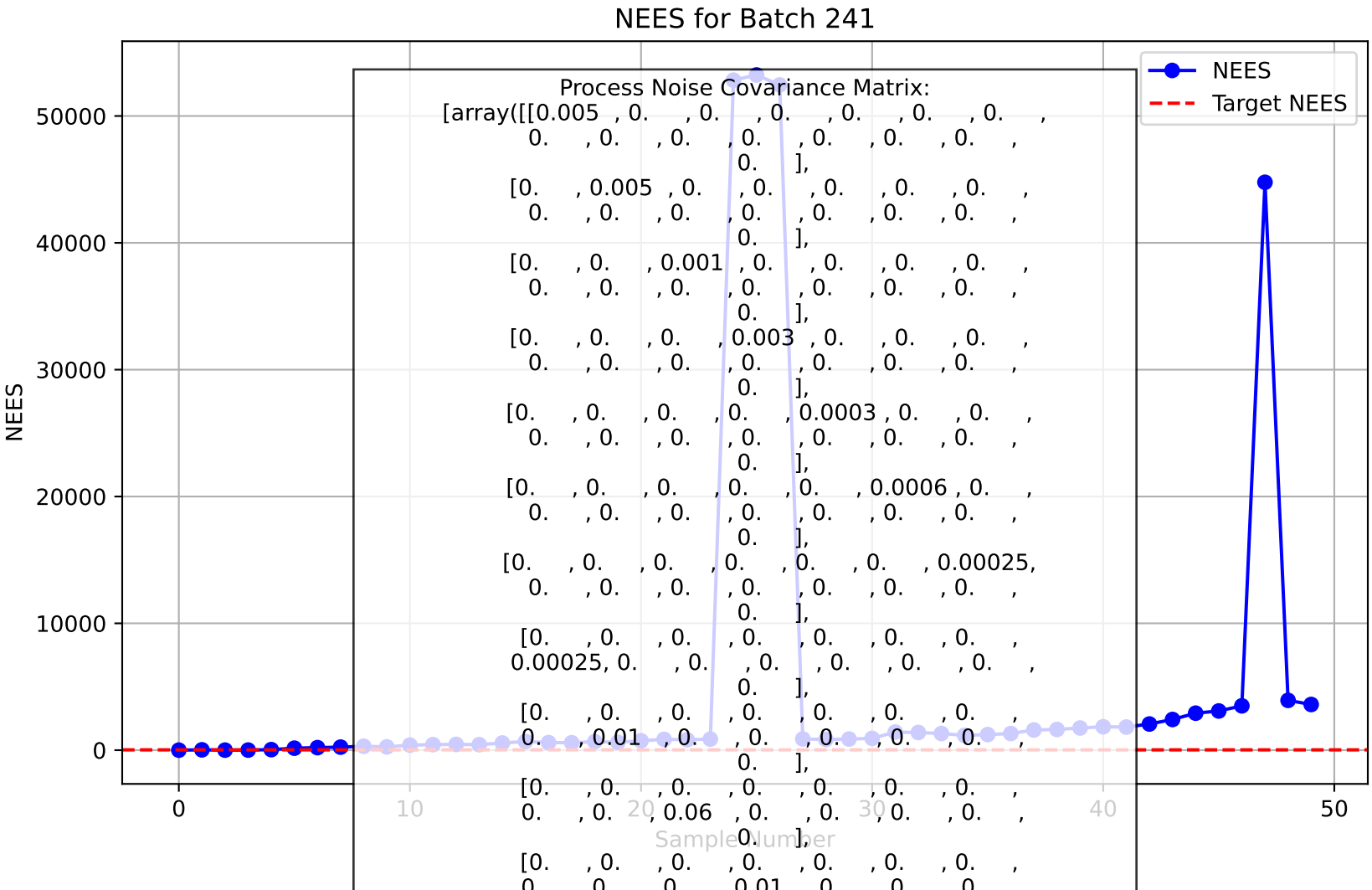

NEES for Batch 236
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.3 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
3000
2500
2000
1500
1000
500
0
0
10
20
30
40
50

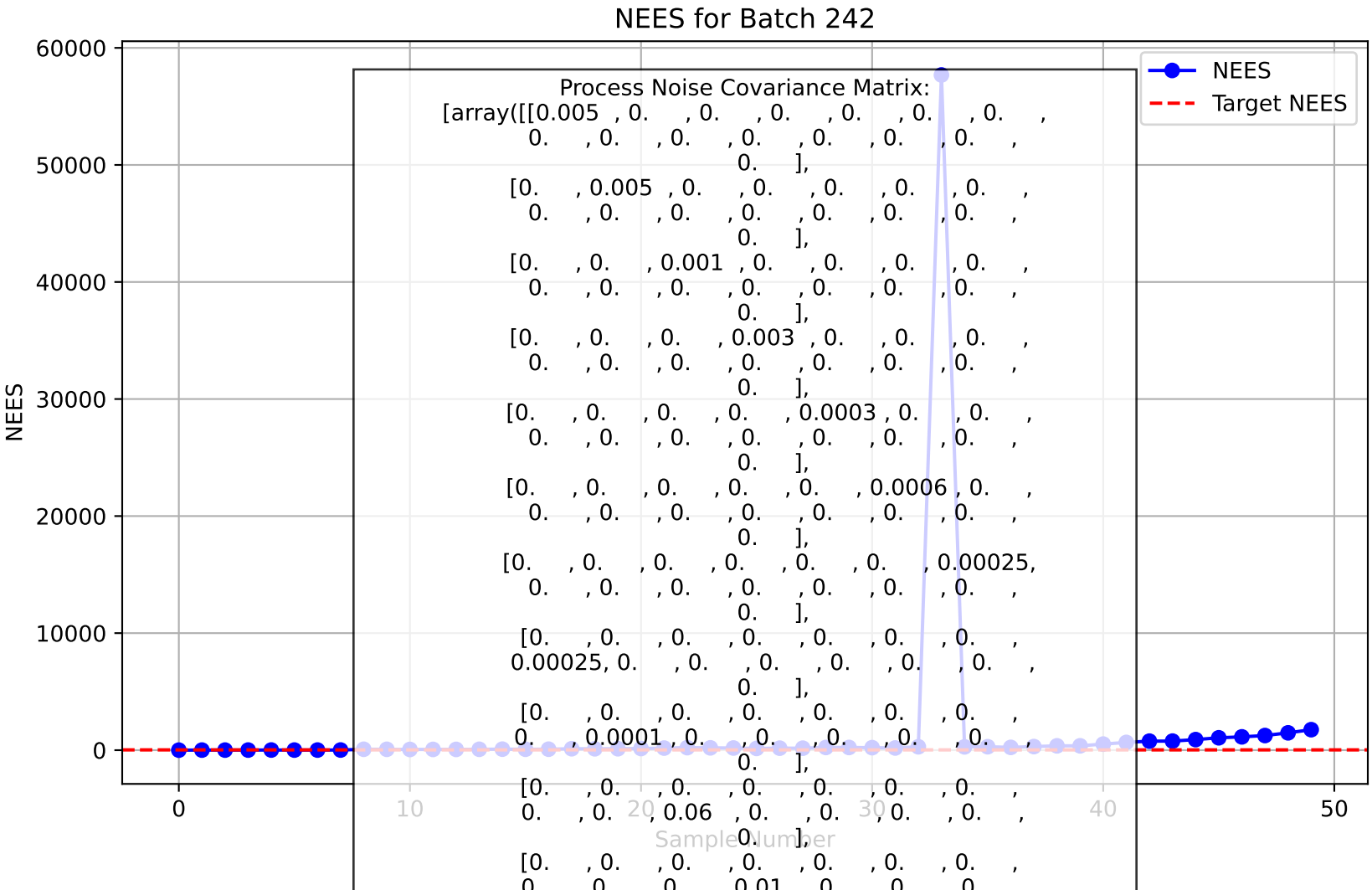

NEES for Batch 237
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001, 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003, 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.01 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005, 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
1000
800
600
400
200
0
0
10
20
30
40
50

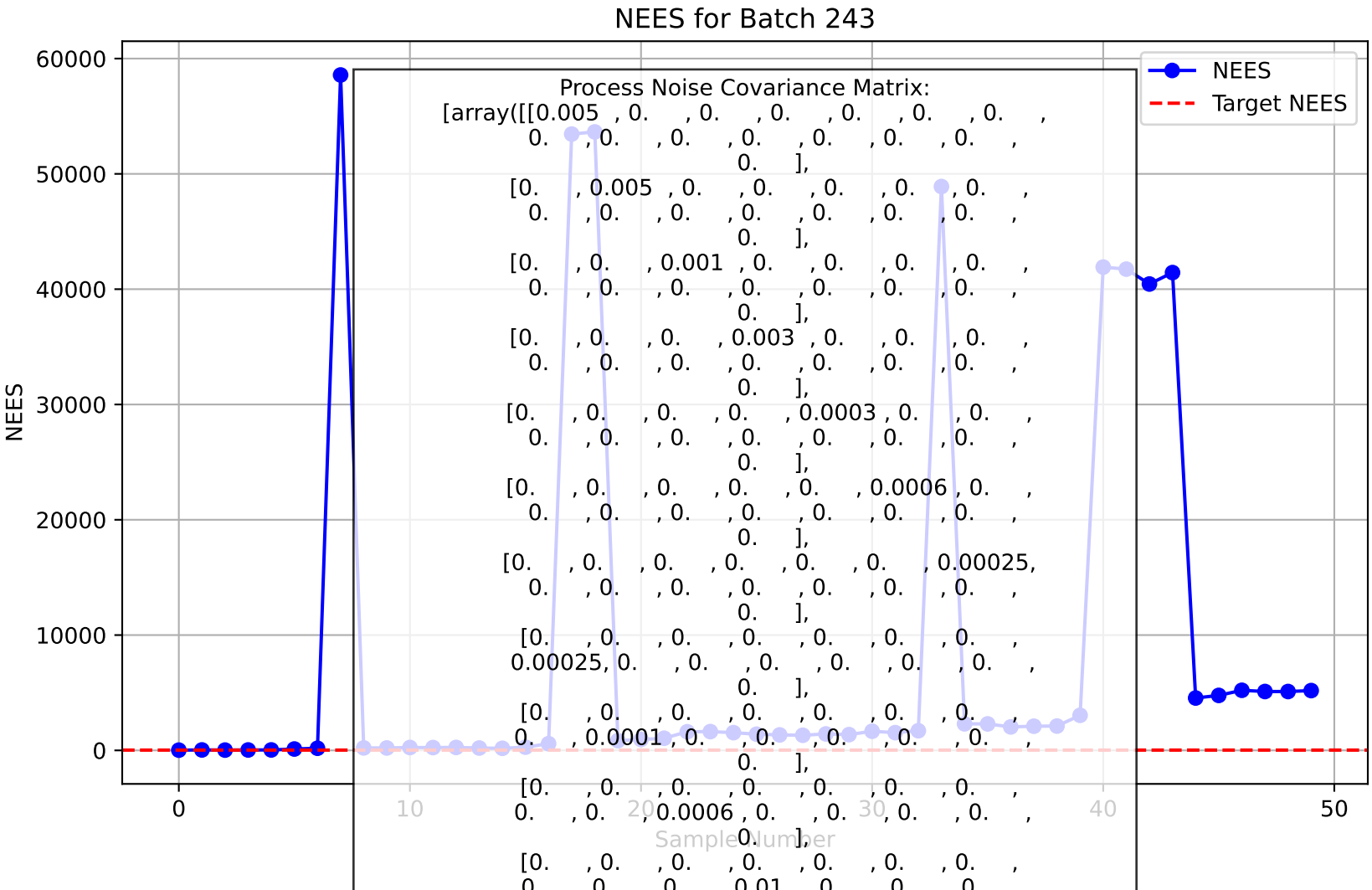

NEES for Batch 238
NEES
Target NEES
NEES
Sample Index
0
200
400
600
800
1000
0
10
20
30
40
50
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.0003, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,

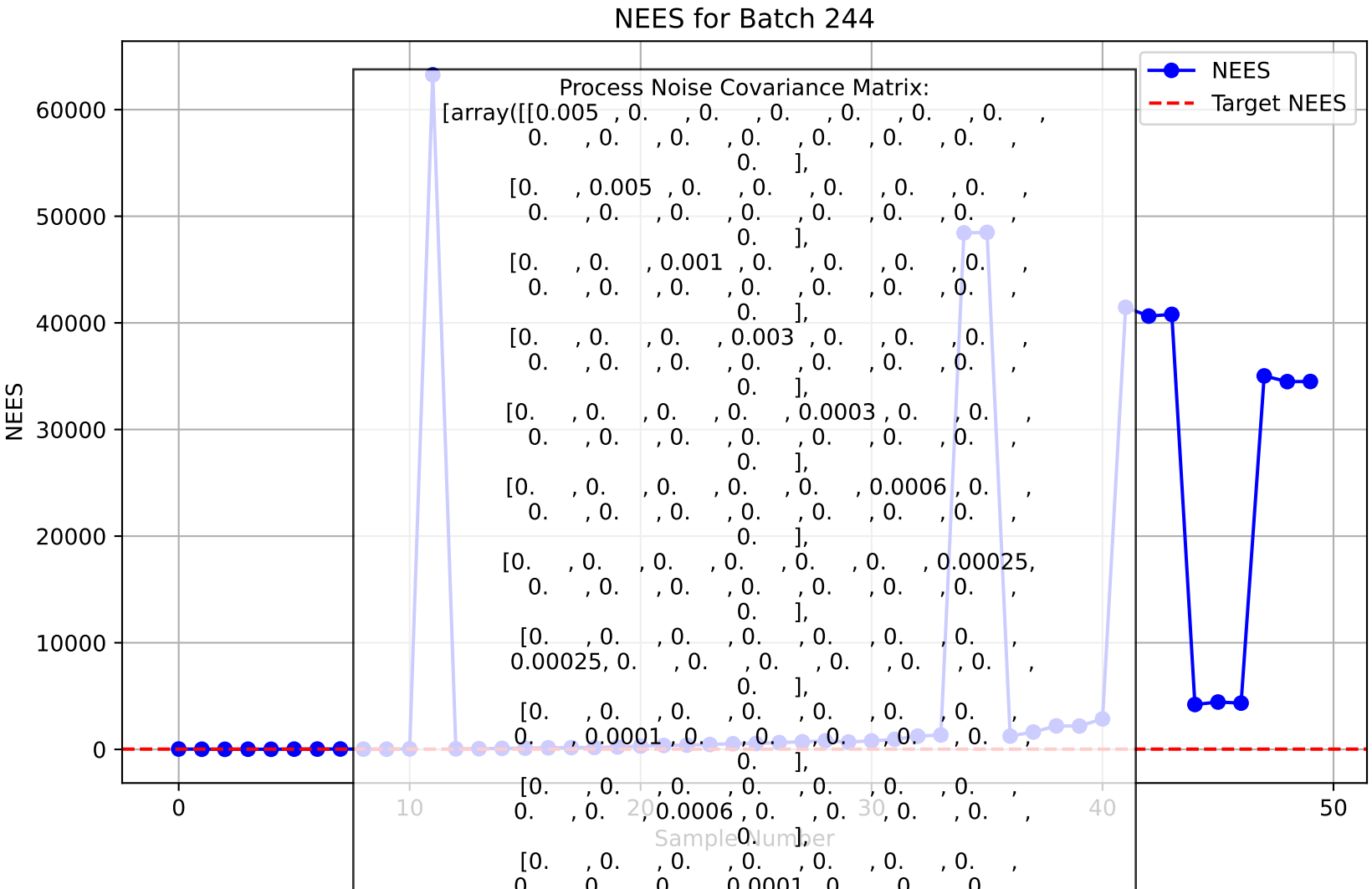

NEES for Batch 239
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.0003, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.0006, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025 ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.06 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.01]]), array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0.],
NEES
Sample
0
10
20
30
40
50
0
10000
20000
30000
40000
50000
60000

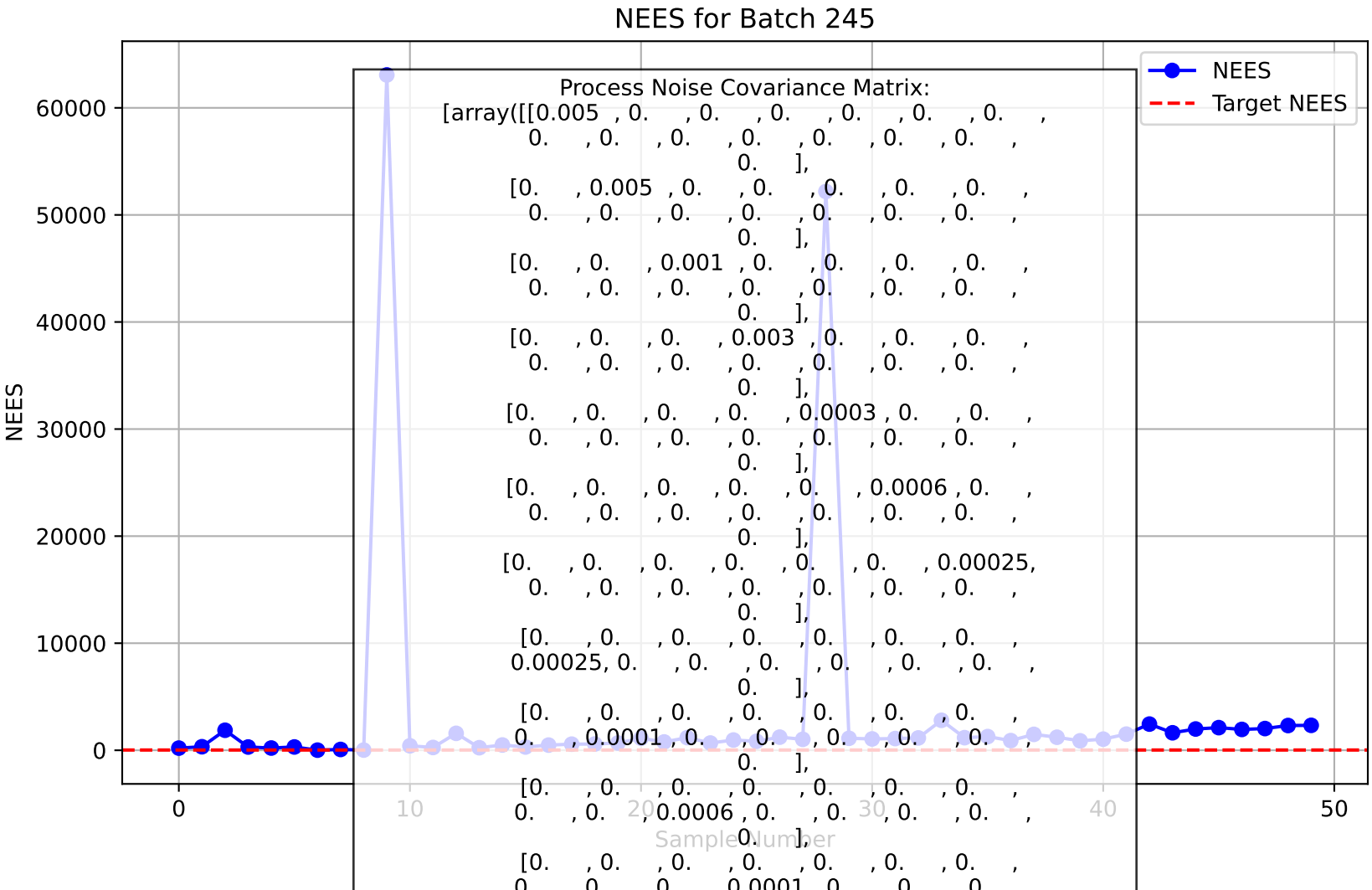

NEES for Batch 240
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.0003 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.0006 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.00025,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.025 , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.06 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Sample Number
60000
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 241
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.0003 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.0006 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.00025,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.
NEES
Sample Number
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 242
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.0003 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.0006 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.00025,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0.
Sample Number
NEES
60000
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 243
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.0003 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.0006 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.00025,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0006 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0. , 0. ,
NEES
Sample Number
60000
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 244
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.0003 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.0006 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.00025,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0006 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0001 , 0. , 0. , 0.
Sample Number
NEES
60000
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 245
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0.],
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0.],
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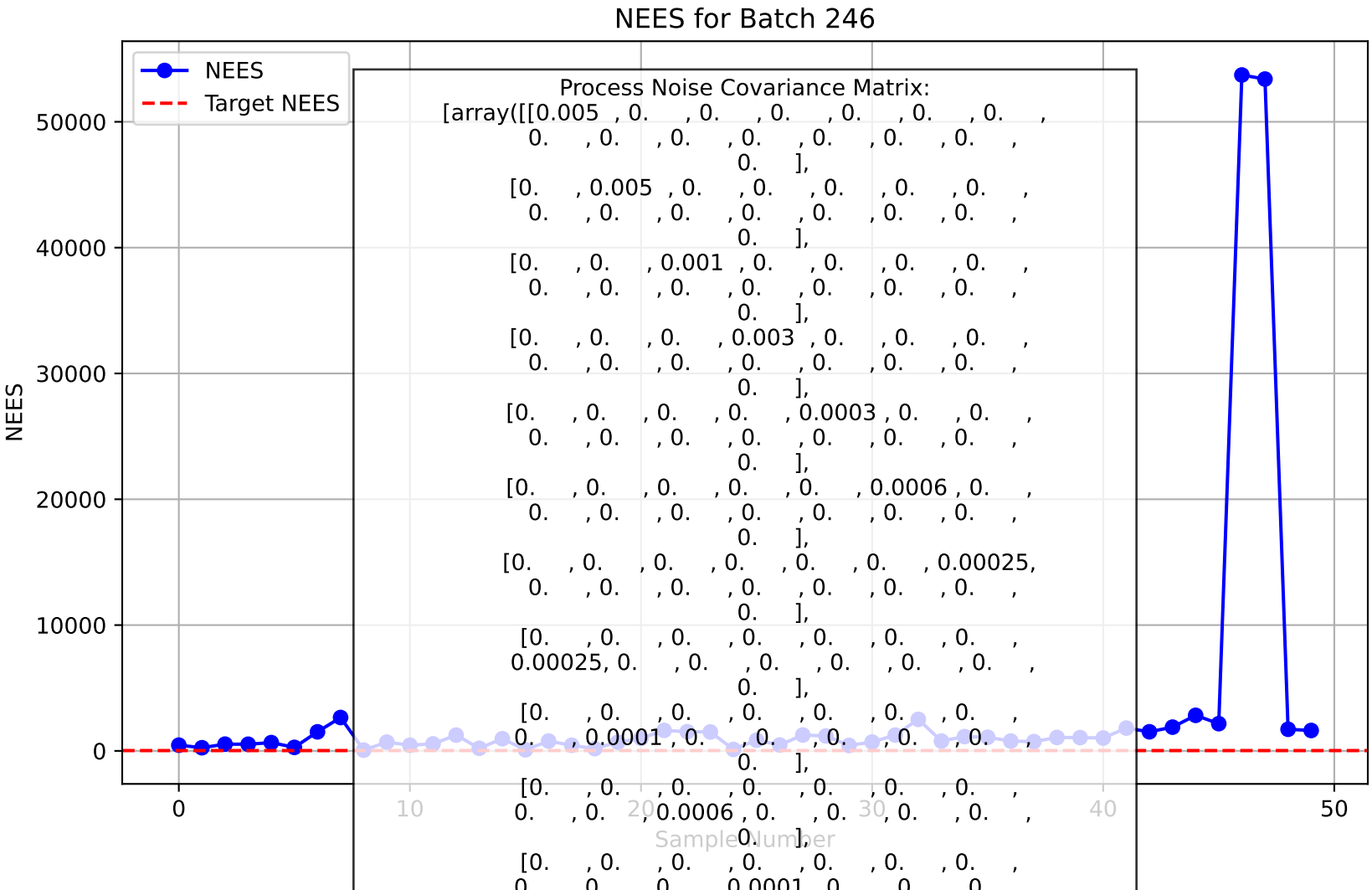
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0006 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0001 , 0. , 0. , 0. ,
NEES
Sample Number
60000
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 246
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0.],
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0.],
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0.],
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0.],
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0.],
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0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
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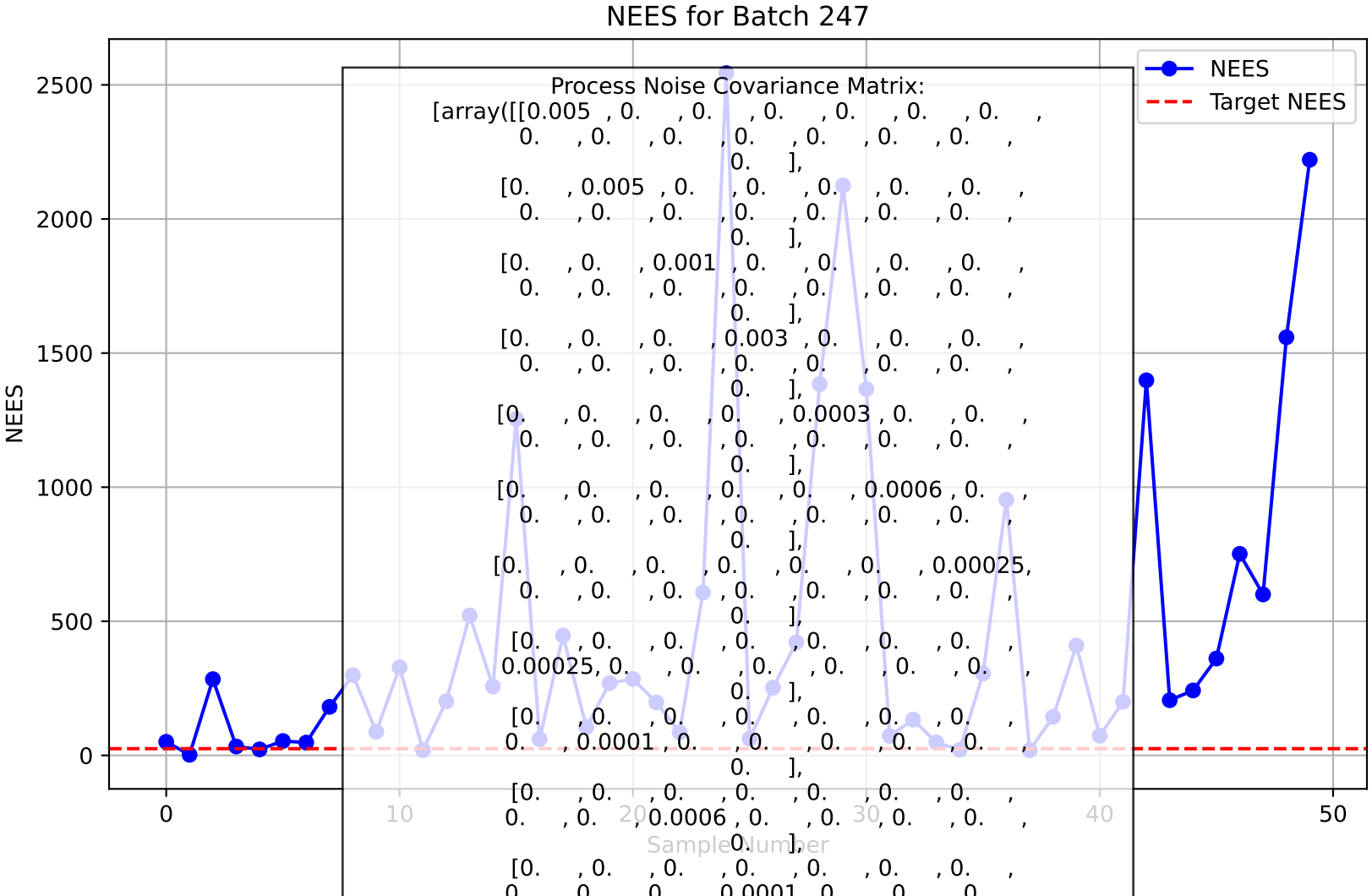
0. , 0. , 0.0006 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0001 , 0. , 0. , 0.
Sample Number
NEES
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 247
NEES
Target NEES
NEES
Sample Number
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
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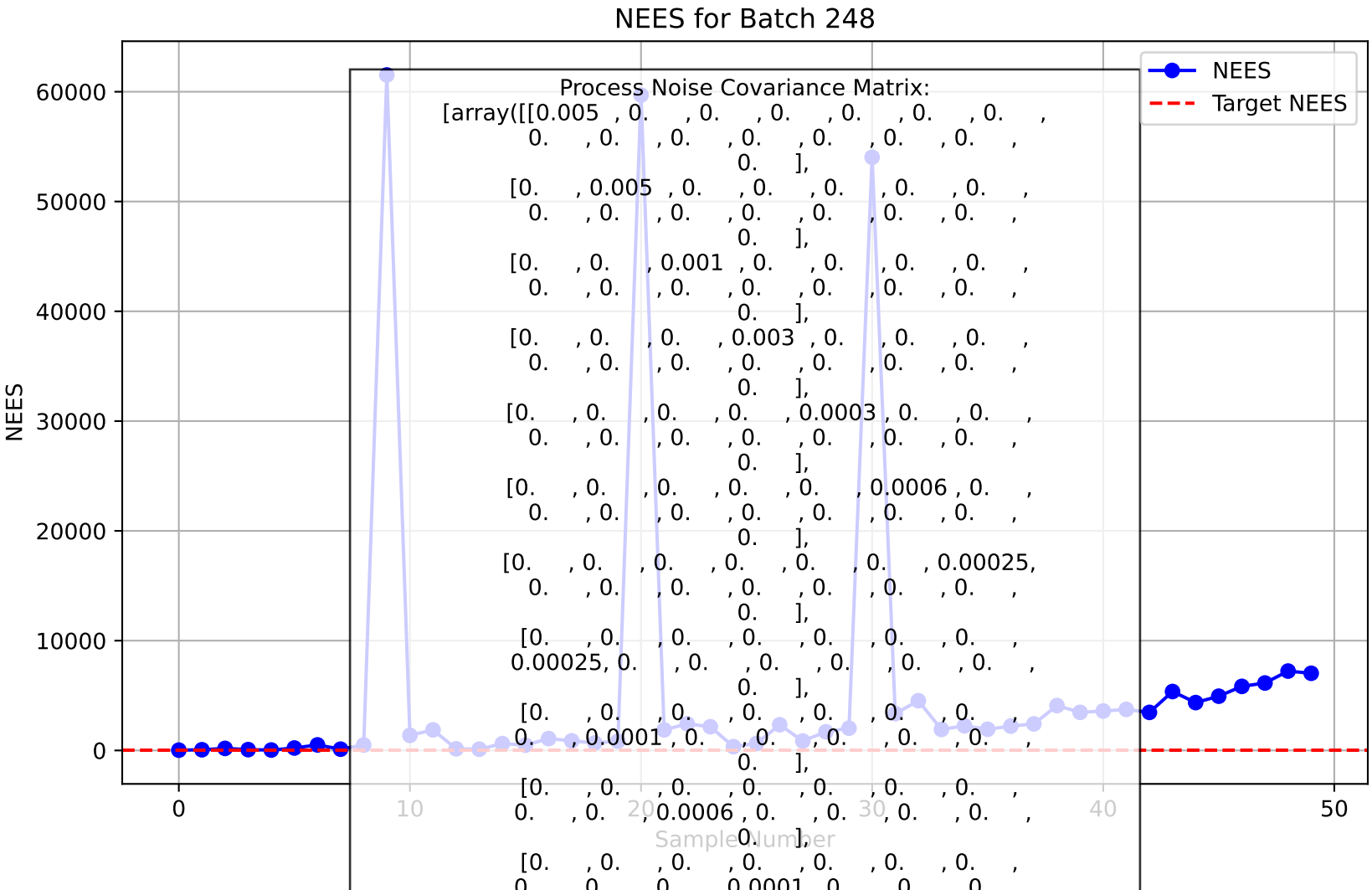
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0006 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0001 , 0. , 0. , 0. ,


NEES for Batch 248
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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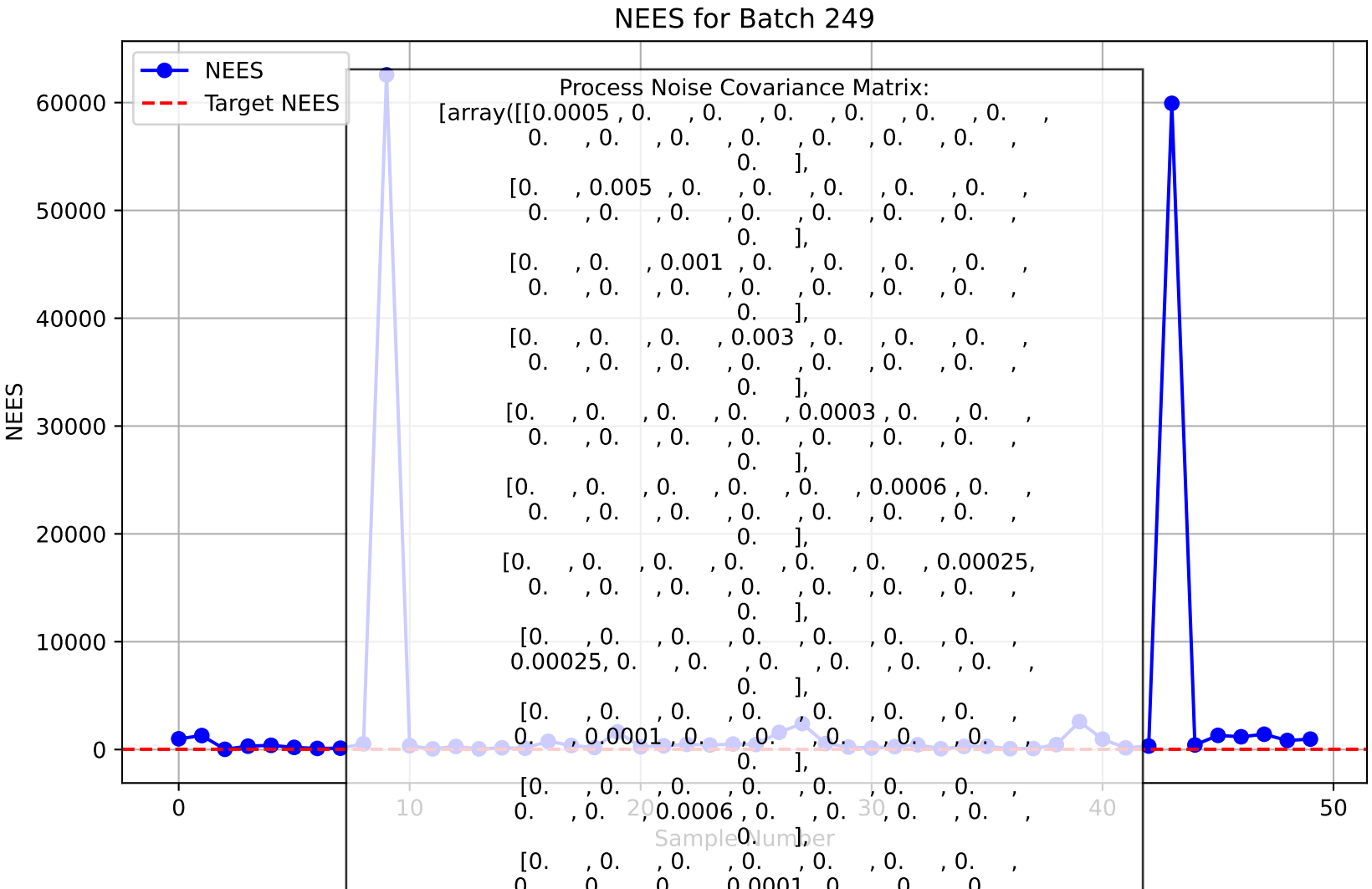
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0006 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0001 , 0. , 0. , 0.
NEES
Sample Number
60000
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 249
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.0005 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0.005 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0.001 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.0006 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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0.],
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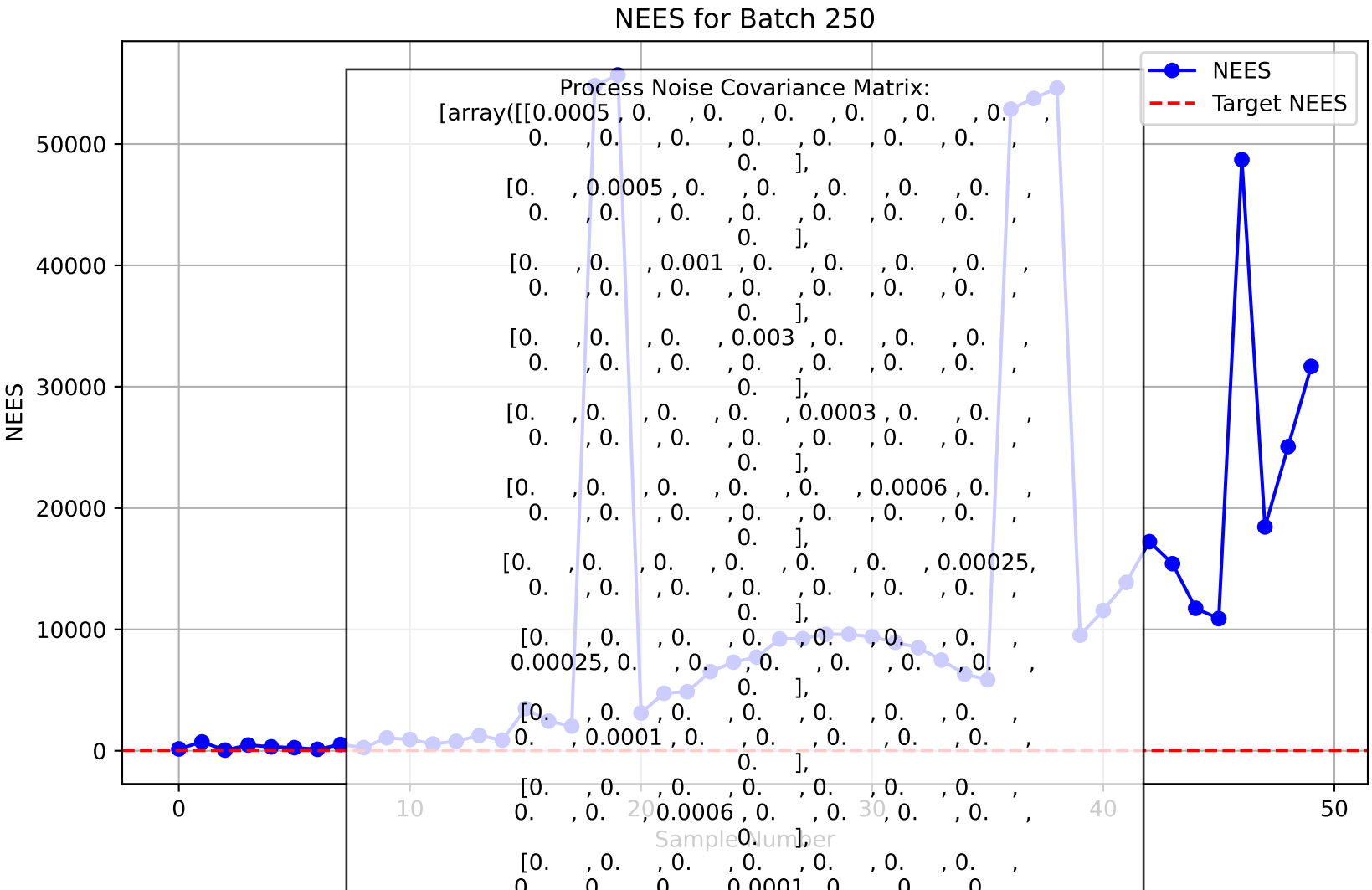
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0006 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0001 , 0. , 0. , 0. ,
Sample Number
NEES
60000
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 250
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.0005 , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.0005 , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.001 , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.003 , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.0003 , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.0006 , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.00025,
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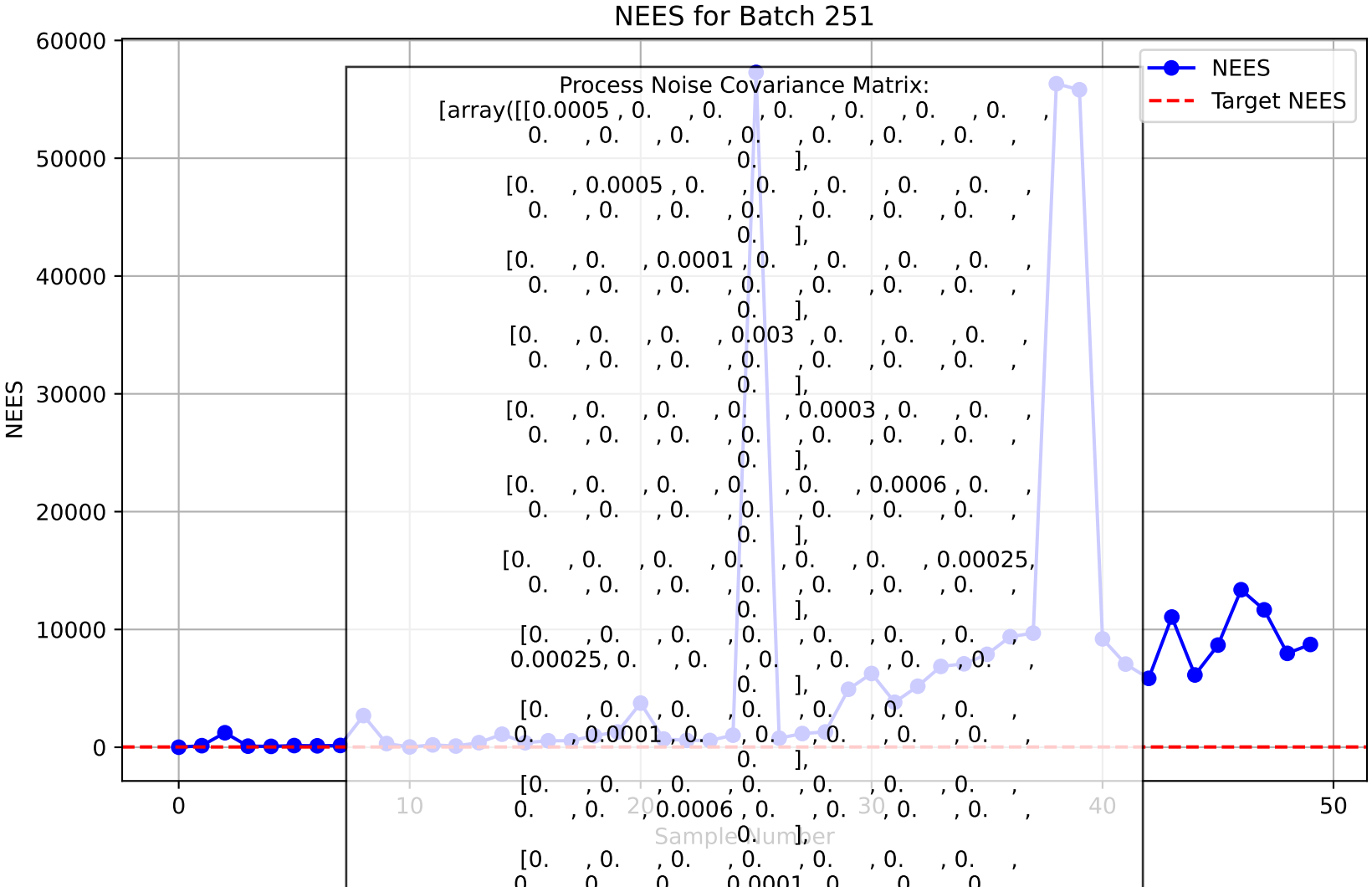
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.00025, 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.0001 , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.0006 , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.0001 , 0.   , 0.   , 0.   ,
NEES
Sample Number
0
10
20
30
40
50
0
10000
20000
30000
40000
50000


NEES for Batch 251
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.0005 , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.0005 , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.0001 , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.003 , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.0003 , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
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0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.00025,
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0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.00025, 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.0001 , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.0006 , 0.   , 0.   , 0.   , 0.   ,
0.   ],
[0.   , 0.   , 0.   , 0.   , 0.   , 0.   , 0.   ,
0.   , 0.   , 0.   , 0.0001 , 0.   , 0.   , 0.   ,
NEES
Sample Number
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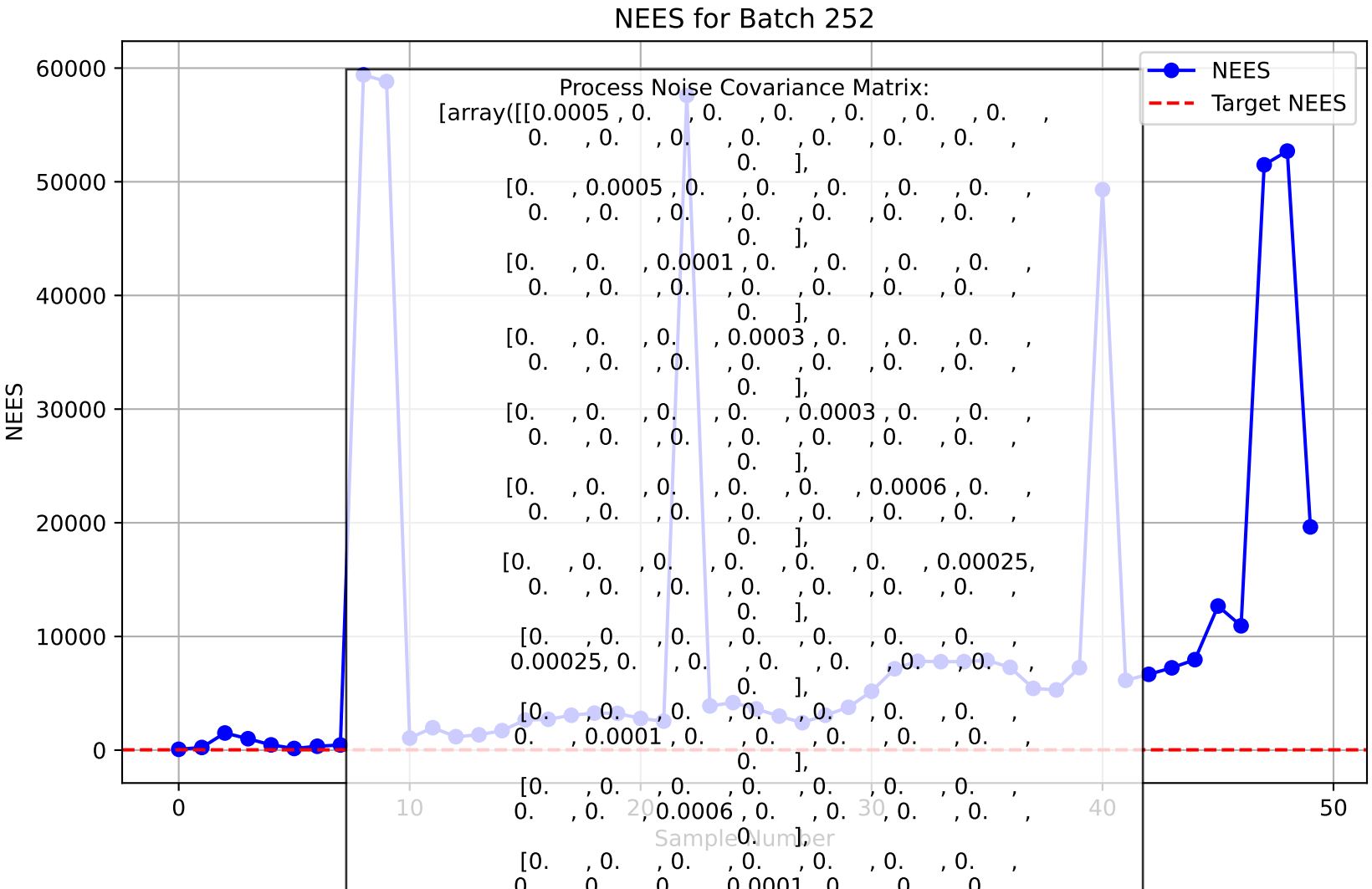
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 252
NEES
Target NEES
Process Noise Covariance Matrix:
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
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0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
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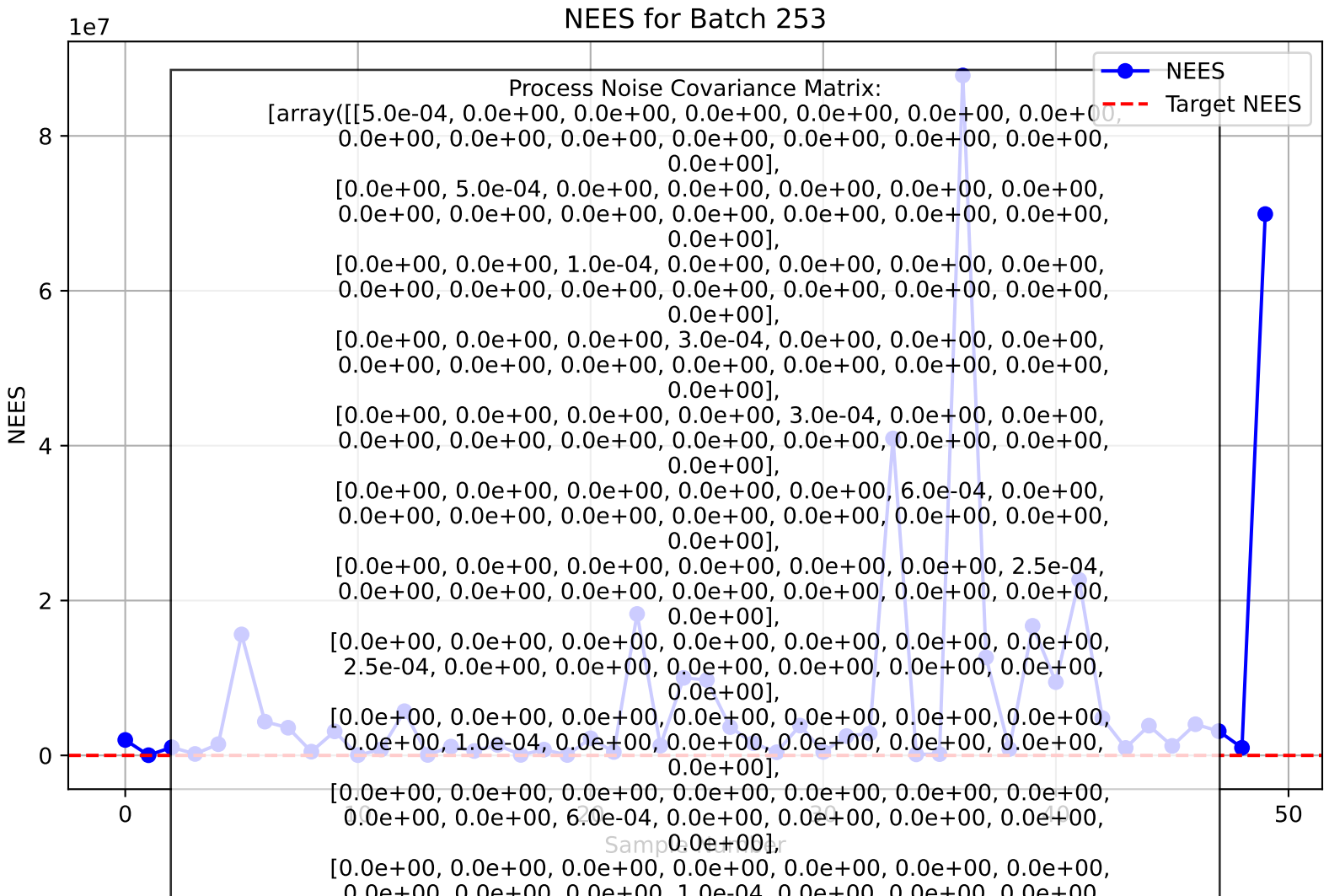
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0.0003 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0.0003 , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0.0006 , 0. ,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.00025,
0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.00025, 0. , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.0001 , 0. , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.0006 , 0. , 0. , 0. , 0. ,
0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.0001 , 0. , 0. , 0. ,
NEES
Sample Number
60000
50000
40000
30000
20000
10000
0
0
10
20
30
40
50


NEES for Batch 253
1e7
NEES
Target NEES
NEES
Sample Number
0
2
4
6
8
0
50
Process Noise Covariance Matrix:
[array([[5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
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0.0e+00],
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0.0e+00],
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0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
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0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-04, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
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0.0e+00],
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0.0e+00],
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0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
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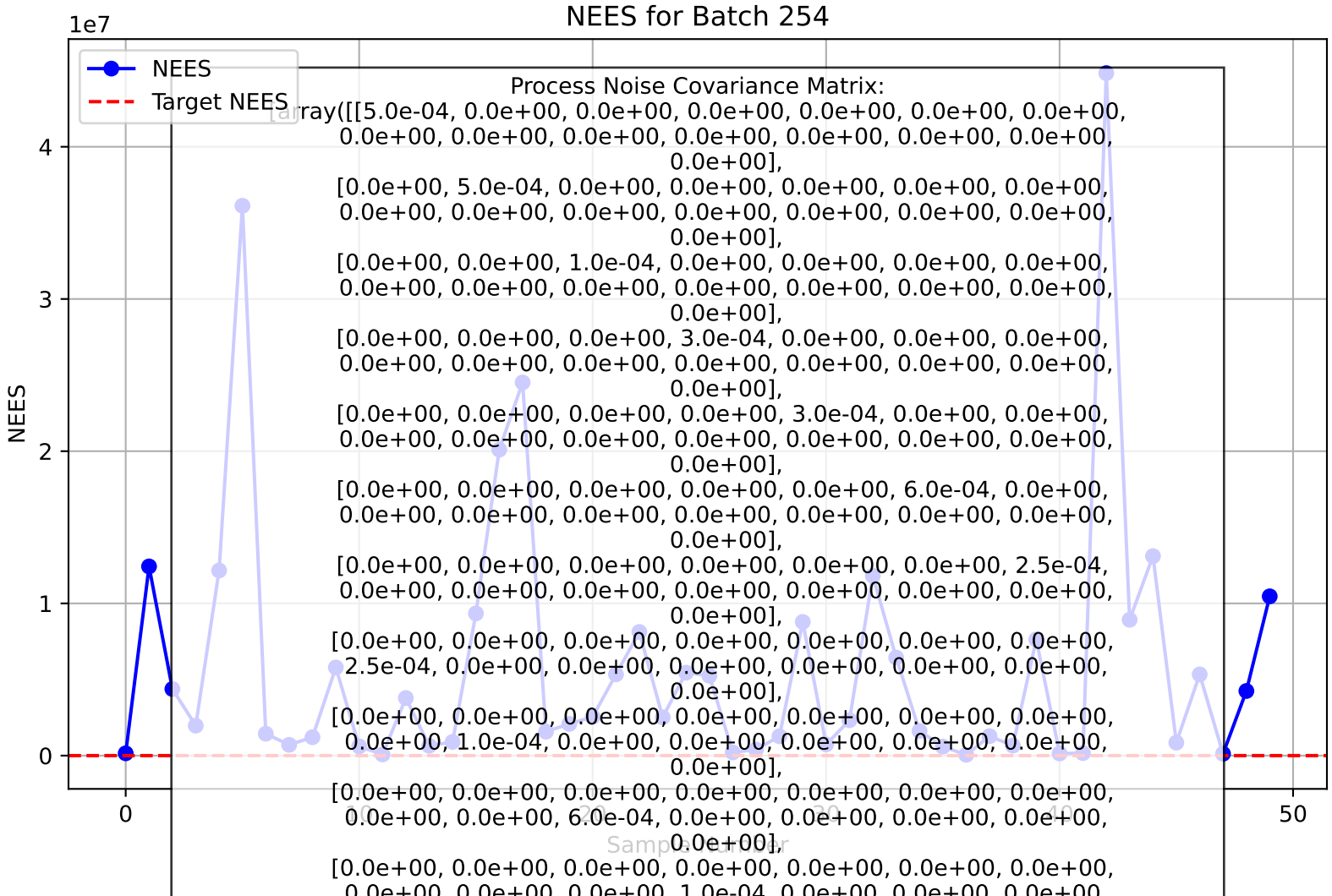
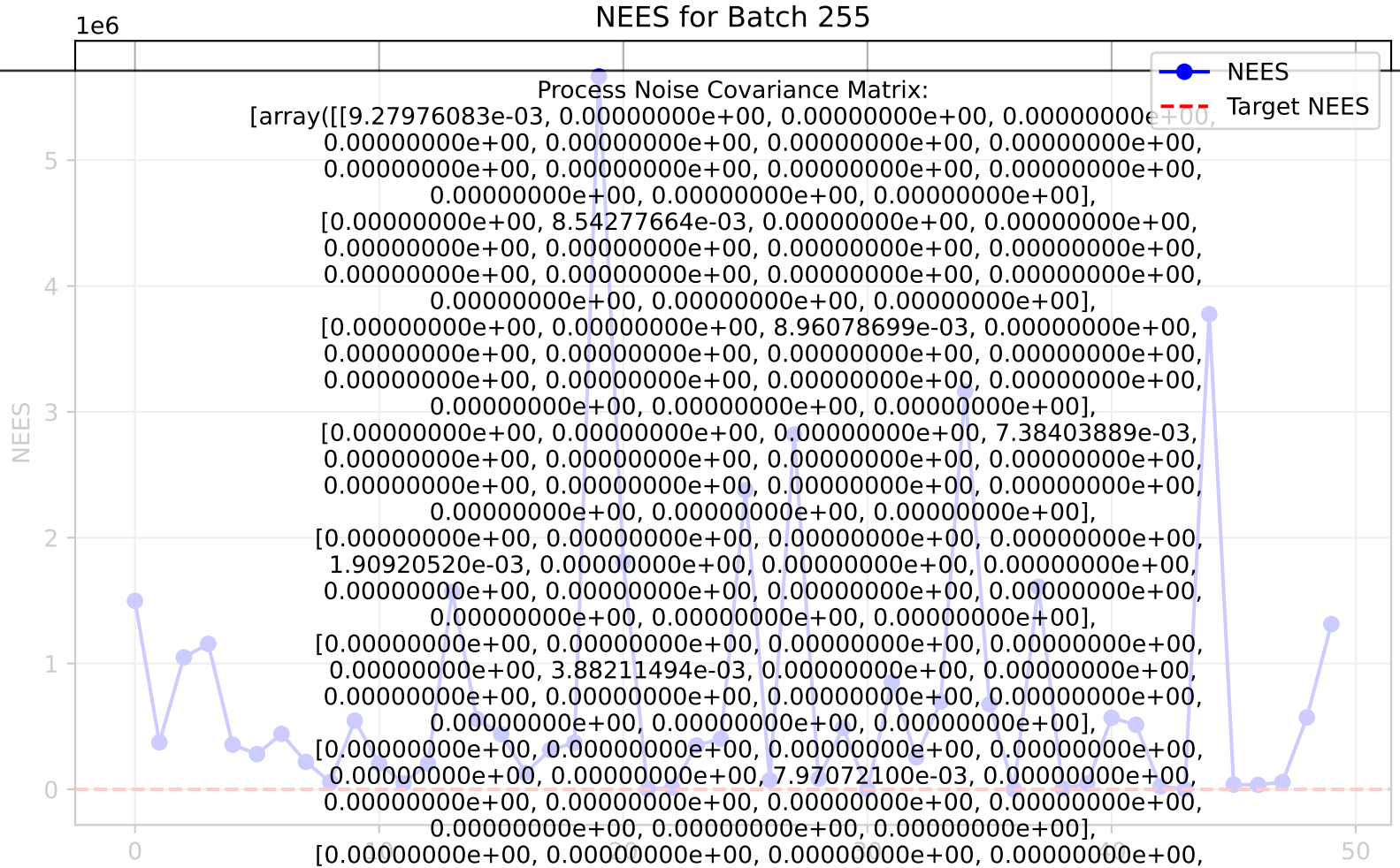
0.0e+00, 0.0e+00, 6.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,


NEES for Batch 254
1e7
NEES
Target NEES
NEES
Sample Number
0
1
2
3
4
0
50
Process Noise Covariance Matrix:
array([[5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 5.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 3.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 3.0e-04, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 6.0e-04, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 2.5e-04,
0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
2.5e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 6.0e-04, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00],
[0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00, 0.0e+00,
0.0e+00, 0.0e+00, 0.0e+00, 1.0e-04, 0.0e+00, 0.0e+00, 0.0e+00,



Process Noise Covariance Matrix:
[array([[9.27976083e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
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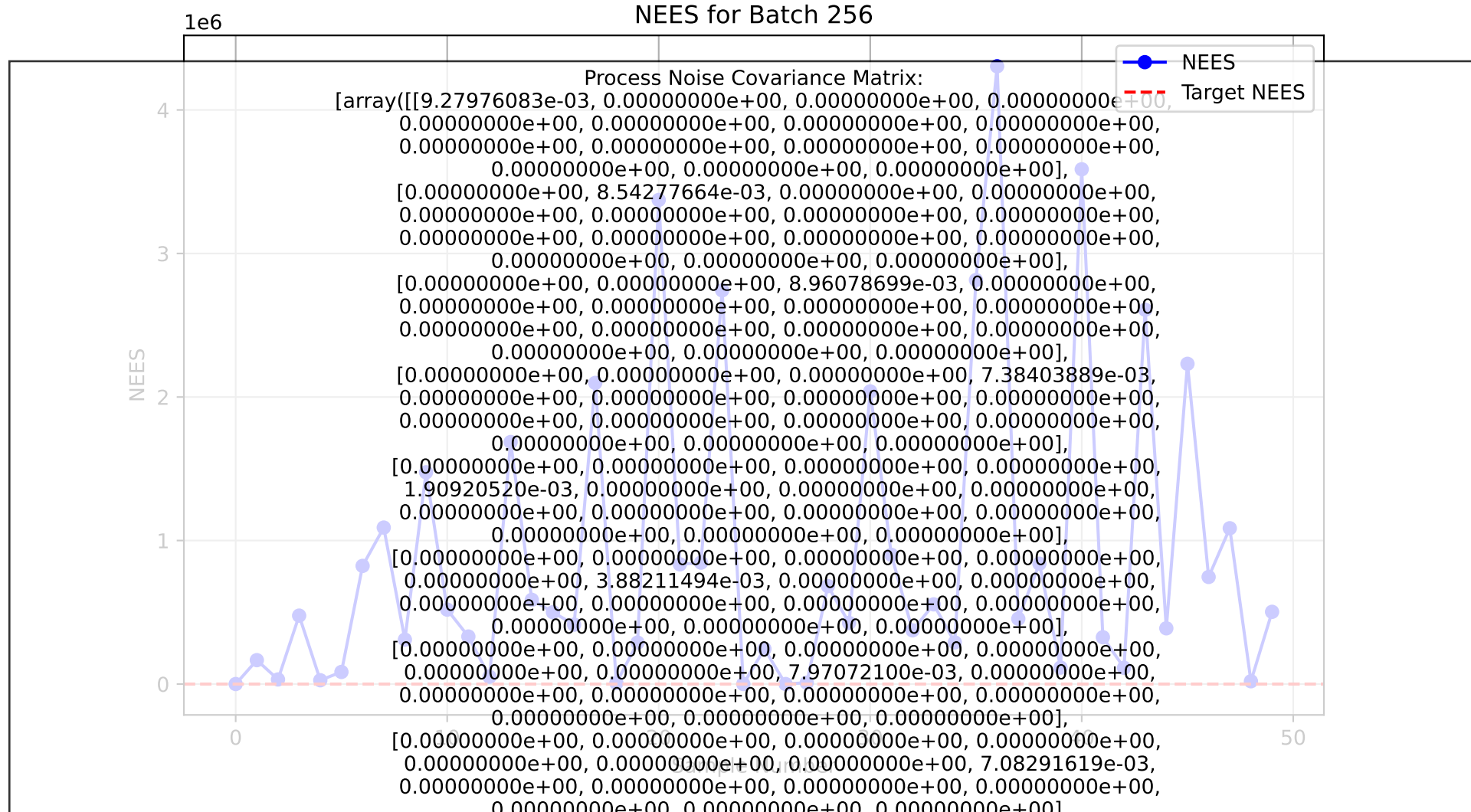
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 8.54277664e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 8.96078699e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 7.38403889e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
1.90920520e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 3.88211494e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 7.97072100e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 7.08291619e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00]


NEES for Batch 256
1e6
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[9.27976083e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
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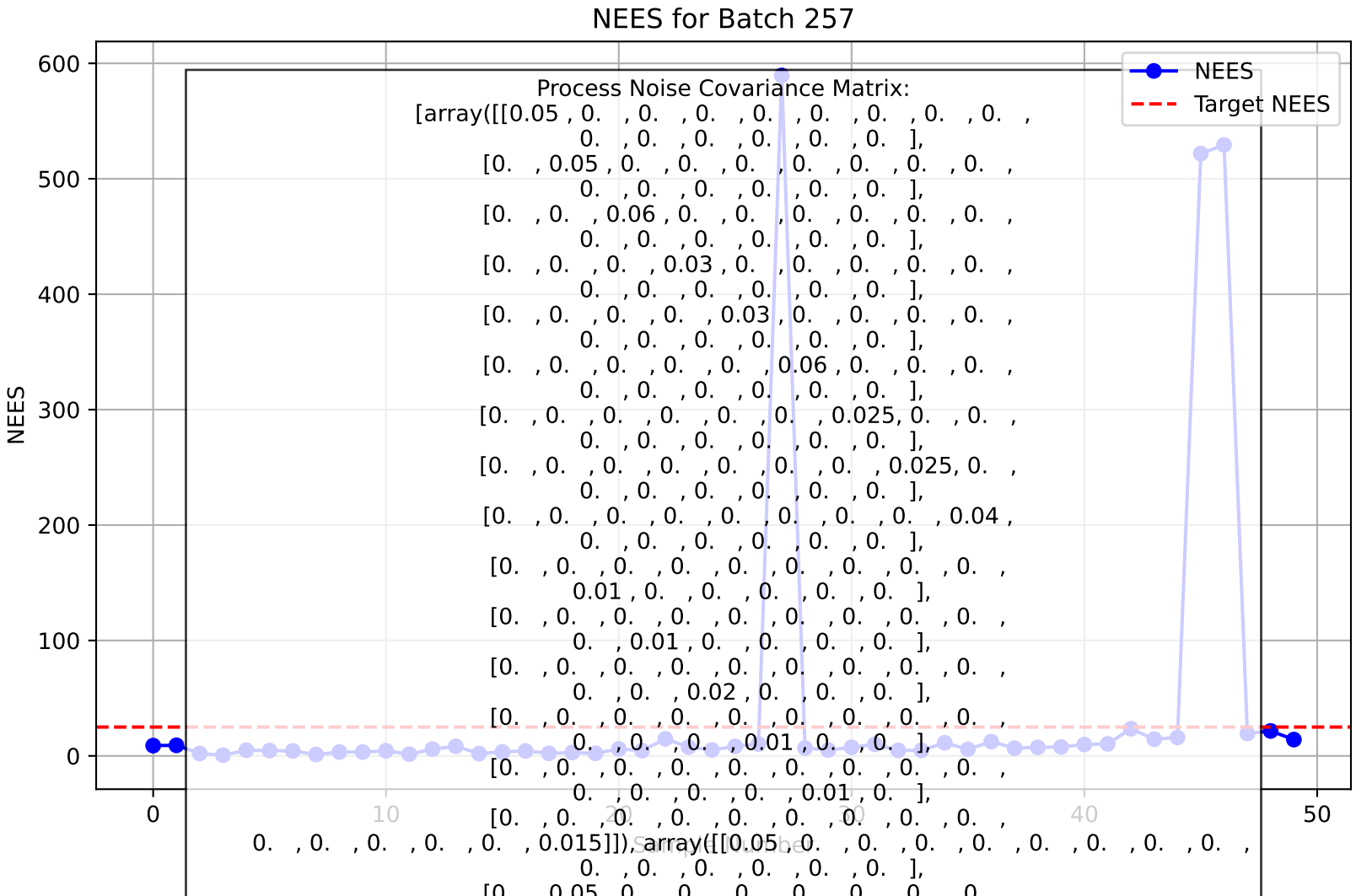
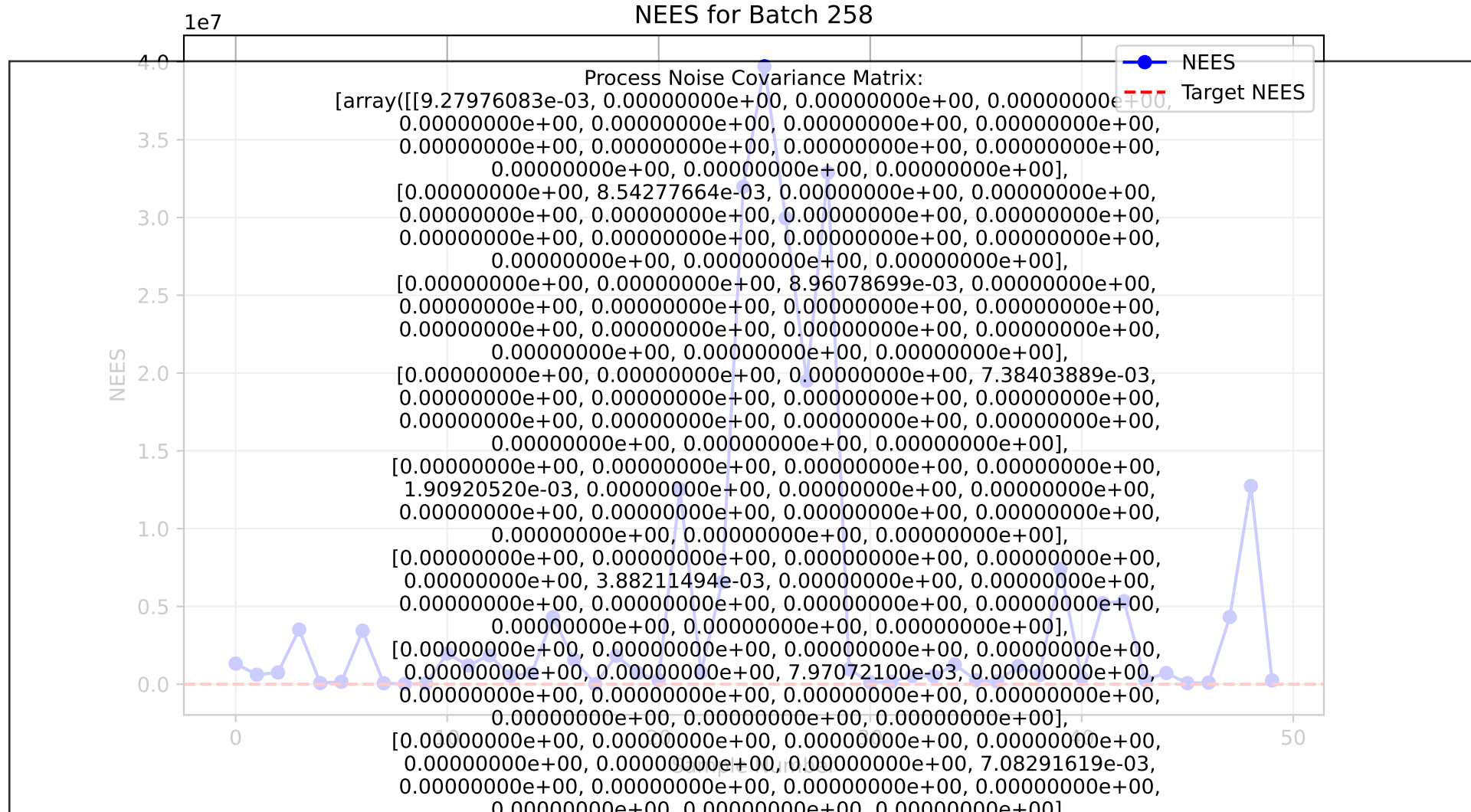
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 8.54277664e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 8.96078699e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 7.38403889e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
1.90920520e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 3.88211494e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 7.97072100e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 7.08291619e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00]
0
1
2
3
4
0
50


NEES for Batch 257
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.04 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.02 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.015]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
NEES
Sample Number
0
10
20
30
40
50
0
100
200
300
400
500
600


NEES for Batch 258
1e7
NEES
Target NEES
NEES
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
50
Process Noise Covariance Matrix:
[array([[9.27976083e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
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0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 8.54277664e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 8.96078699e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 7.38403889e-03,
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0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
1.90920520e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 3.88211494e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 7.97072100e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 7.08291619e-03,
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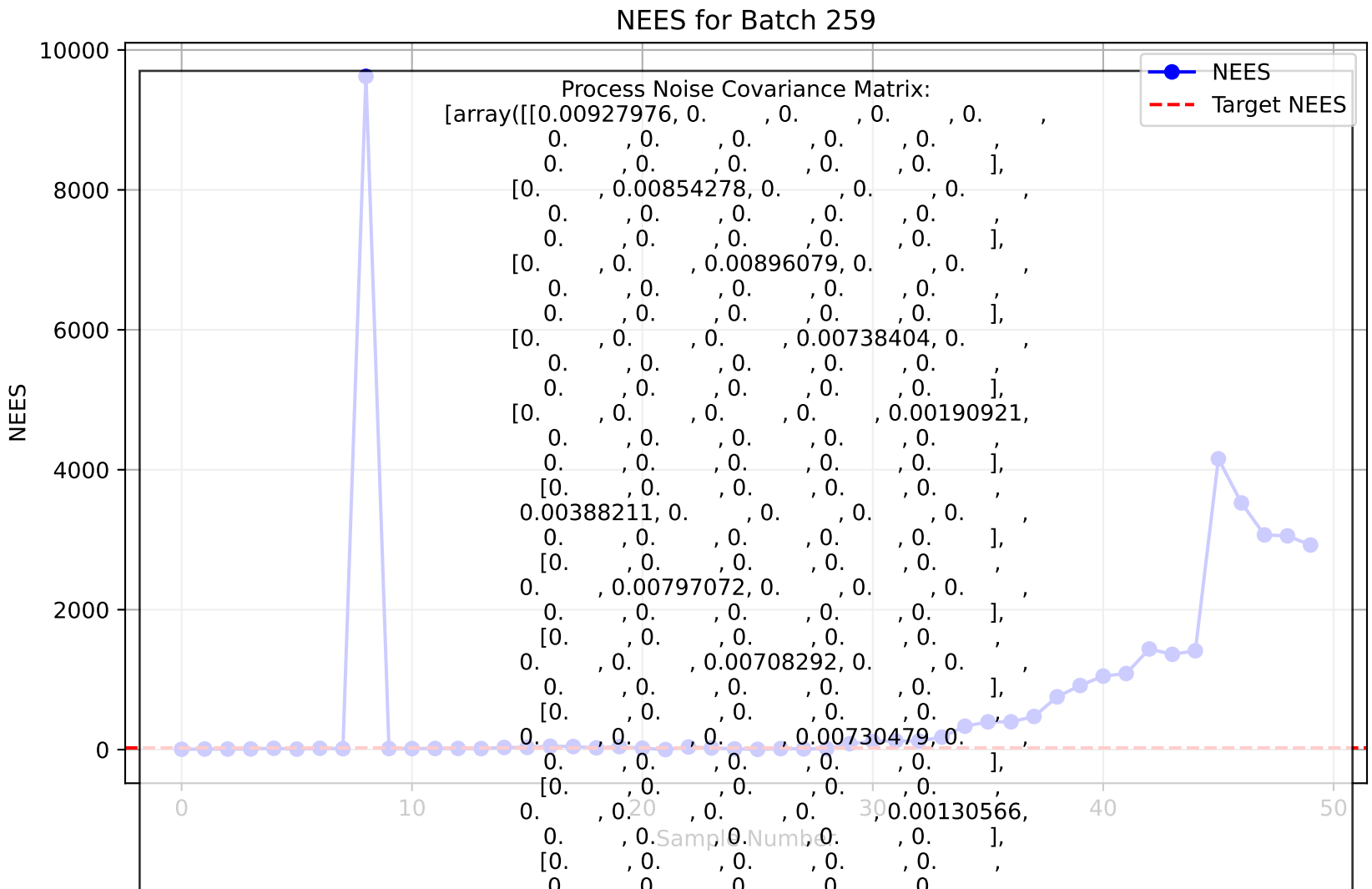
0.00000000e+00, 0.00000000e+00, 0.00000000e+00]


NEES for Batch 259
NEES
Target NEES
Process Noise Covariance Matrix:
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0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
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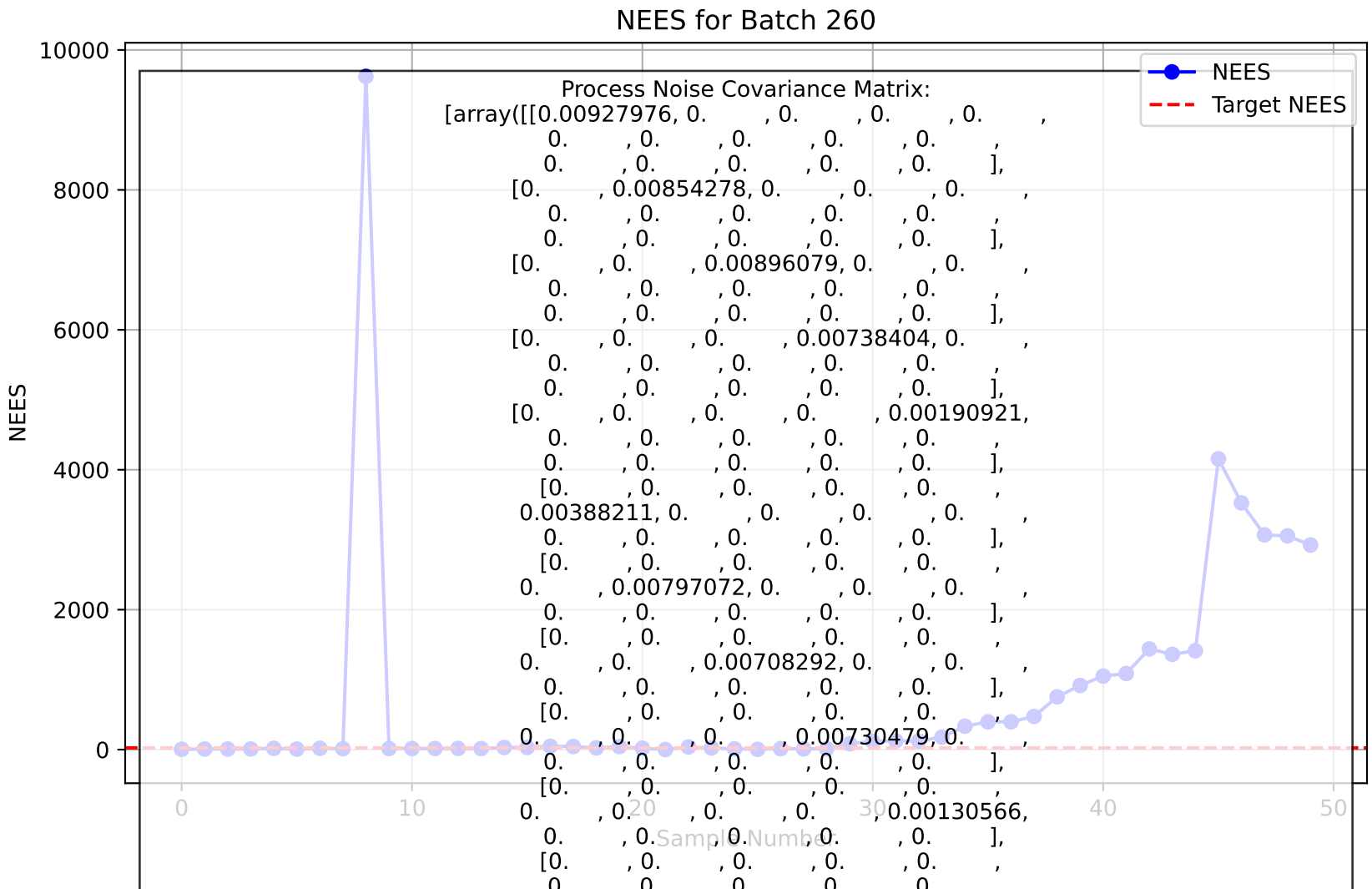
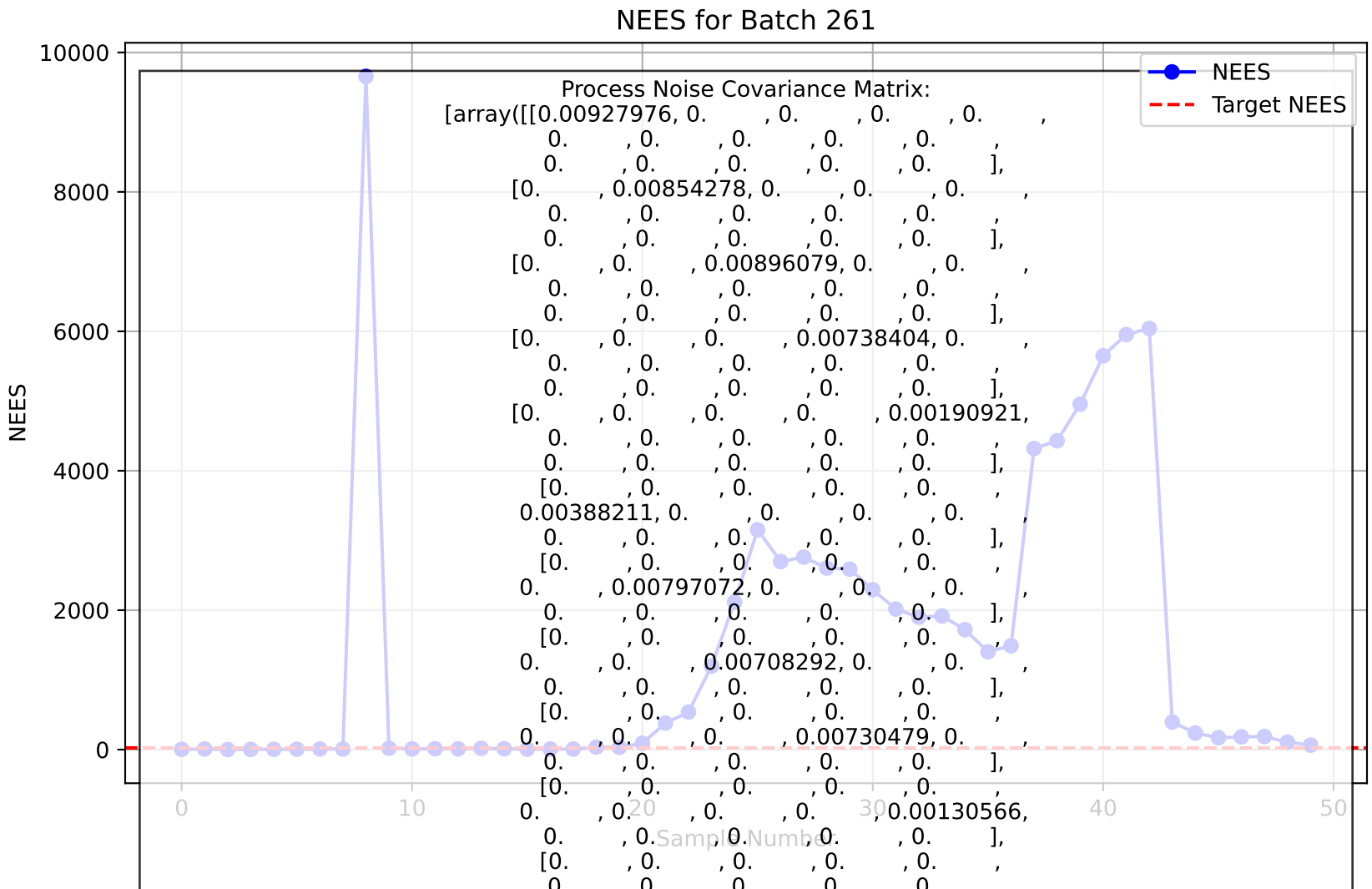
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.00896079, 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.00738404, 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.00190921,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0.00388211, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0.00797072, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.00708292, 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.00730479, 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.00130566,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.
NEES
Sample Number
10000
8000
6000
4000
2000
0
0
10
20
30
40
50


NEES for Batch 260
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.00927976, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0.00854278, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.00896079, 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.00738404, 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.00190921,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0.00388211, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0.00797072, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.00708292, 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.00730479, 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.00130566,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.
NEES
Sample Number
10000
8000
6000
4000
2000
0
0
10
20
30
40
50


NEES for Batch 261
NEES
Target NEES
Process Noise Covariance Matrix:
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0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
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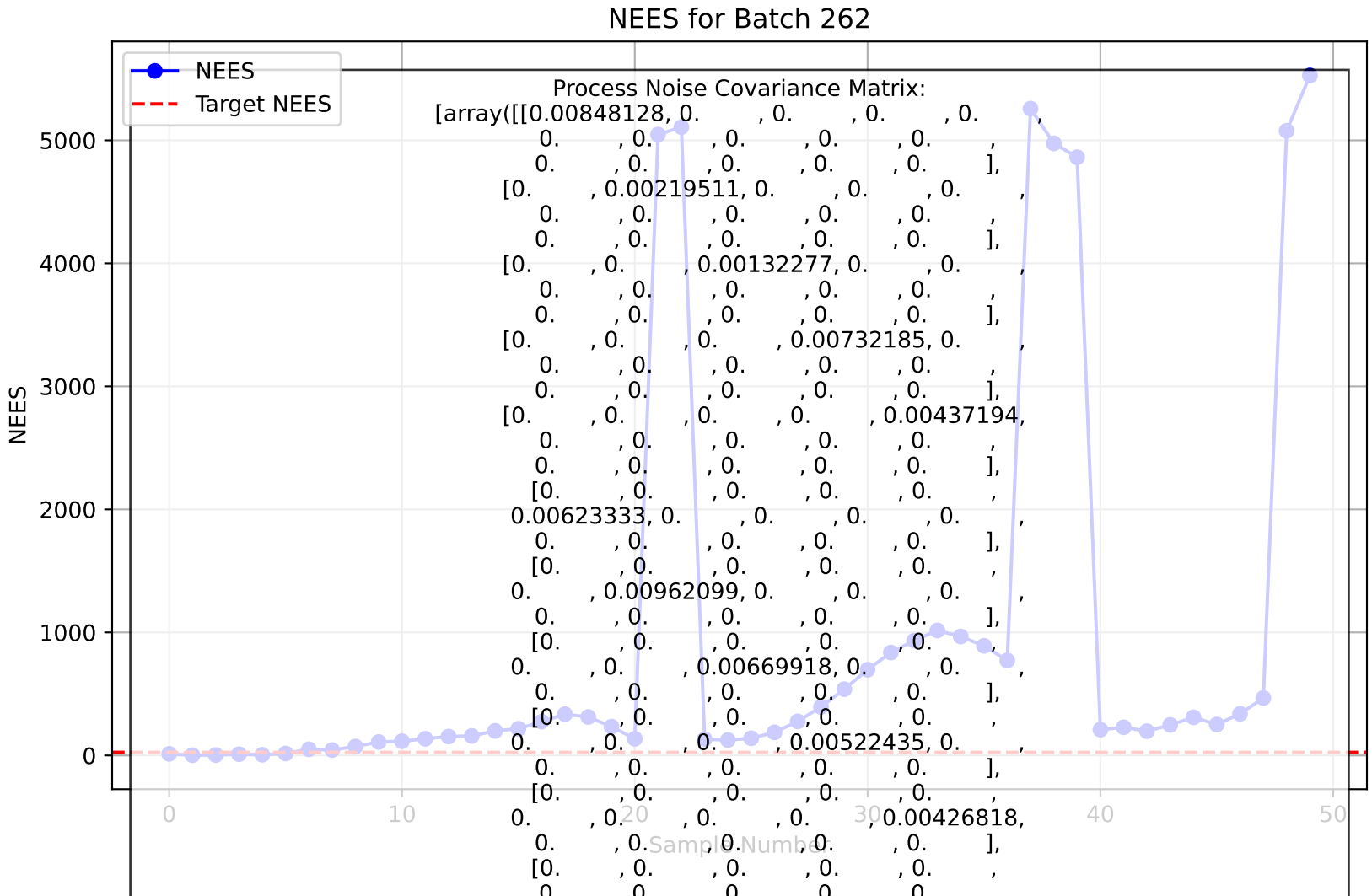
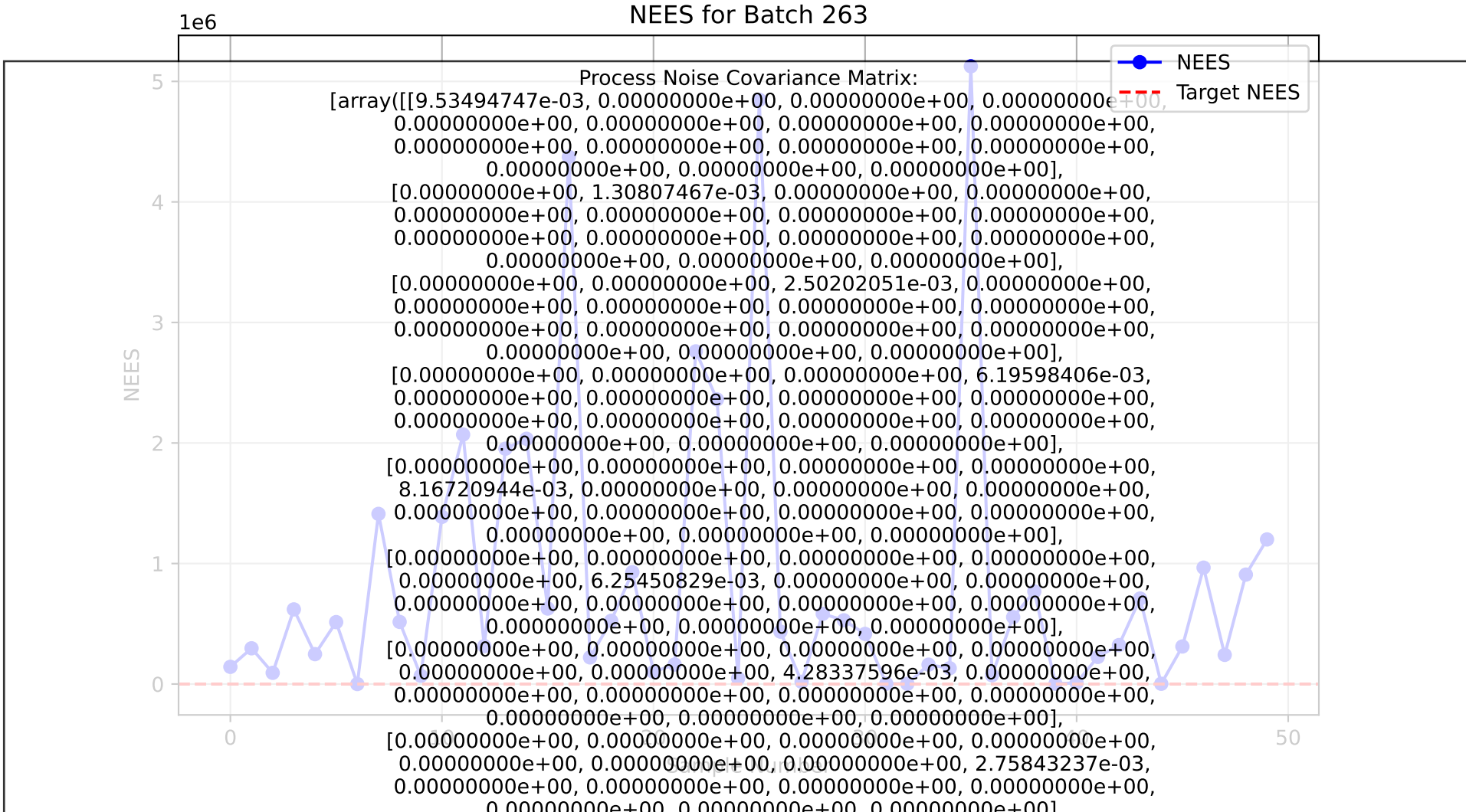
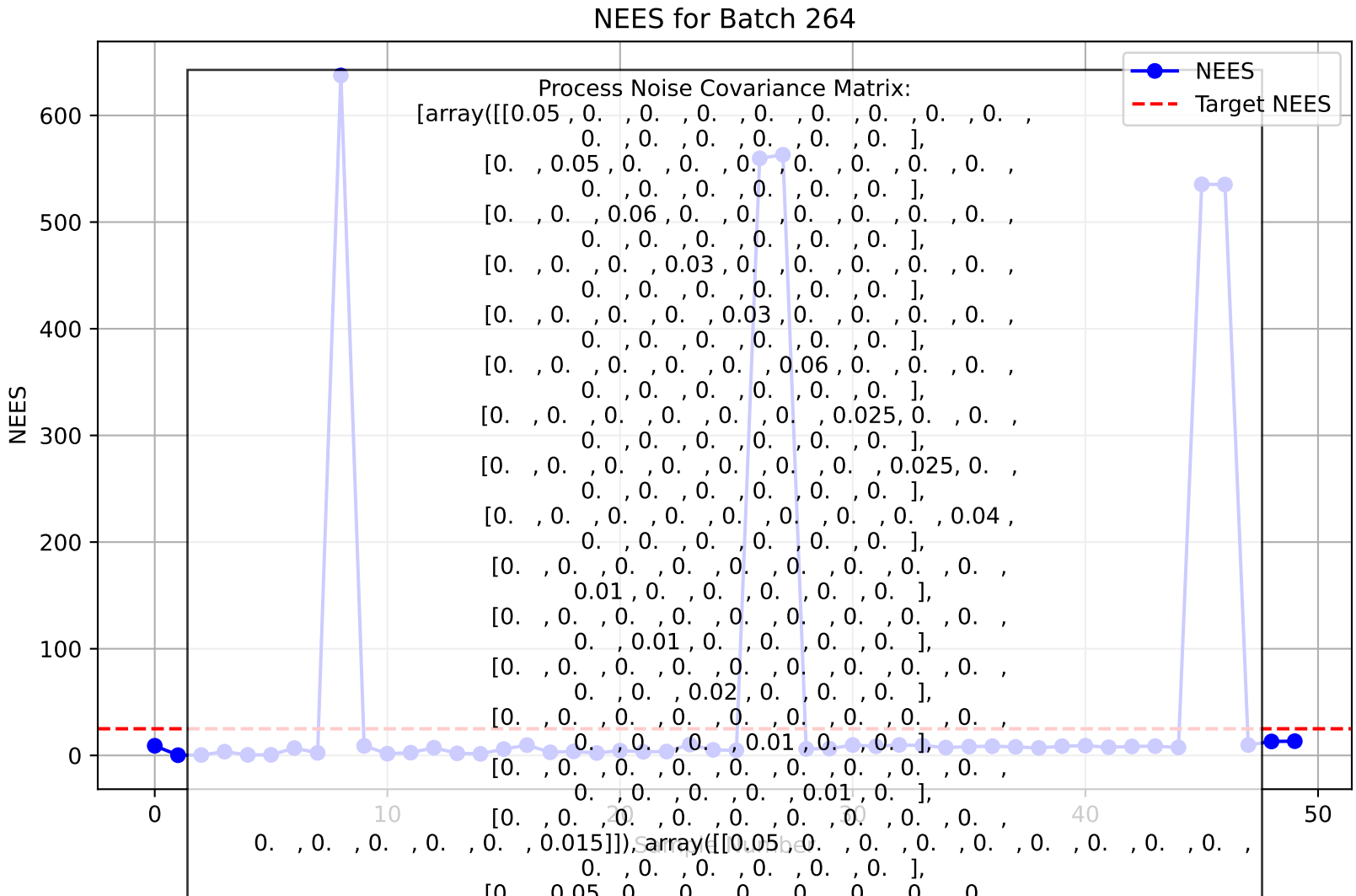
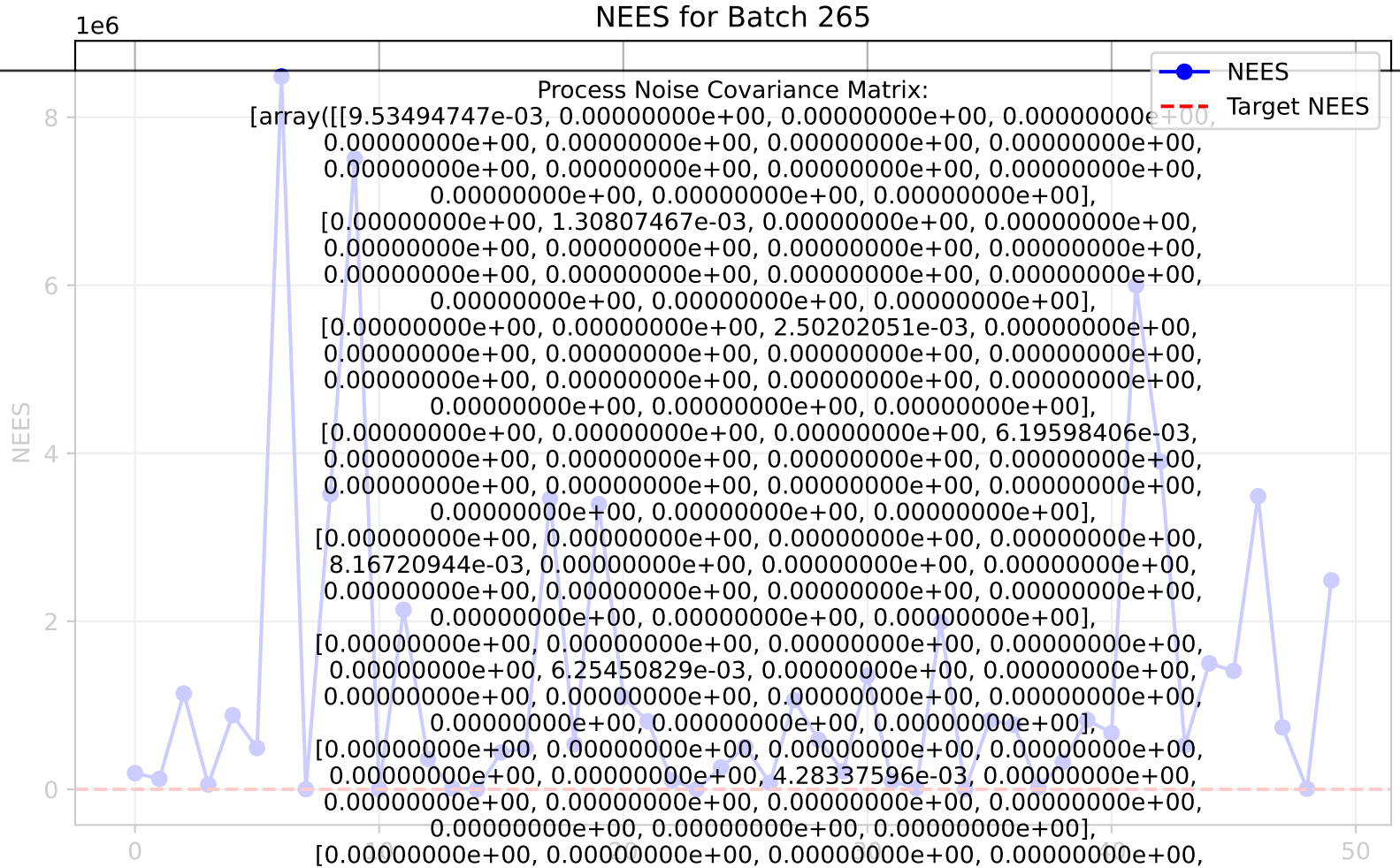
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.00896079, 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.00738404, 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.00190921,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0.00388211, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0.00797072, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.00708292, 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.00730479, 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.00130566,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.
NEES
Sample Number
10000
8000
6000
4000
2000
0
0
10
20
30
40
50

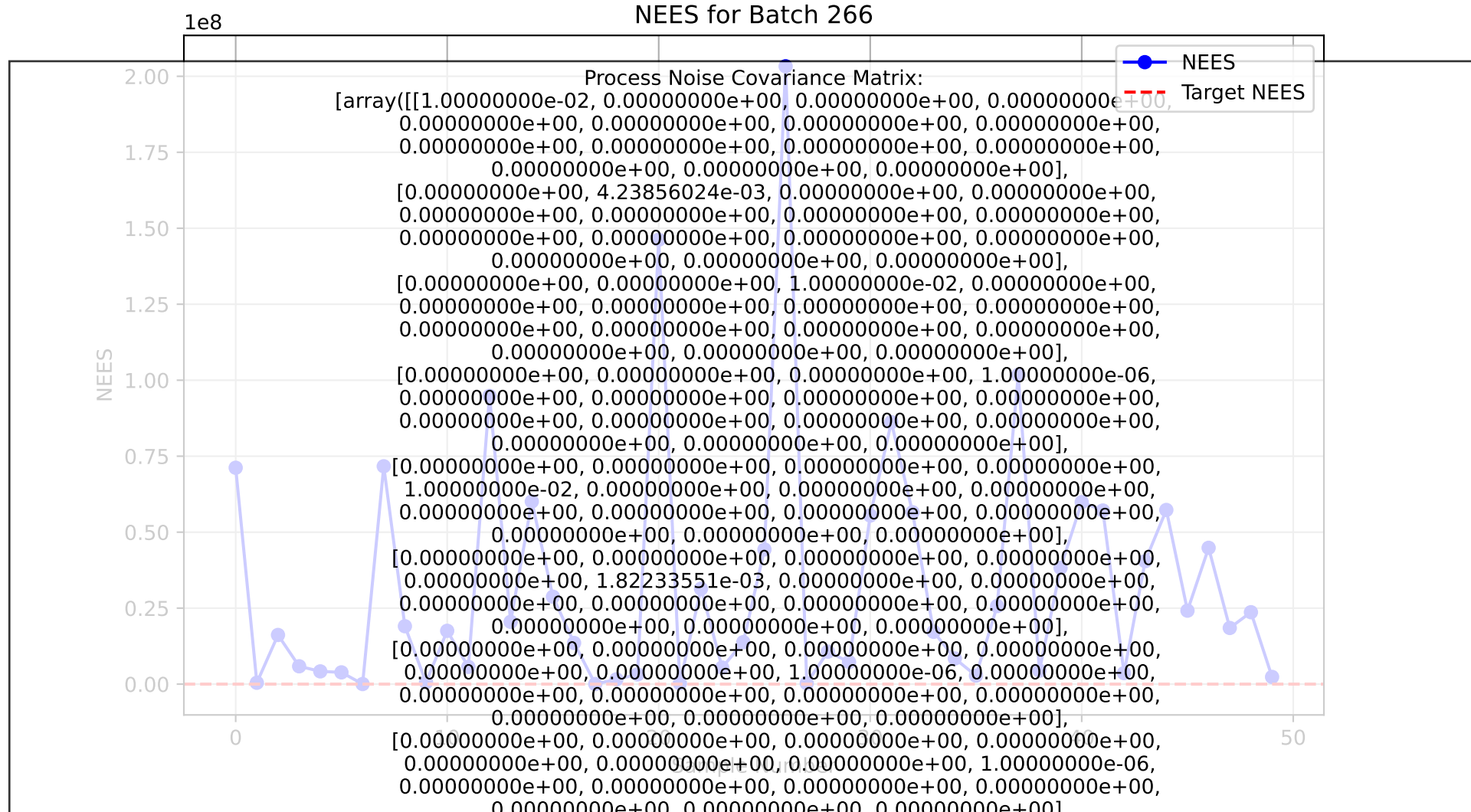

NEES for Batch 262
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.00848128, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0.00219511, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.00132277, 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.00732185, 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.00437194,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0.00623333, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0.00962099, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.00669918, 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.00522435, 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.00426818,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.
NEES
Sample Number
0
1000
2000
3000
4000
5000
0
10
20
30
40
50

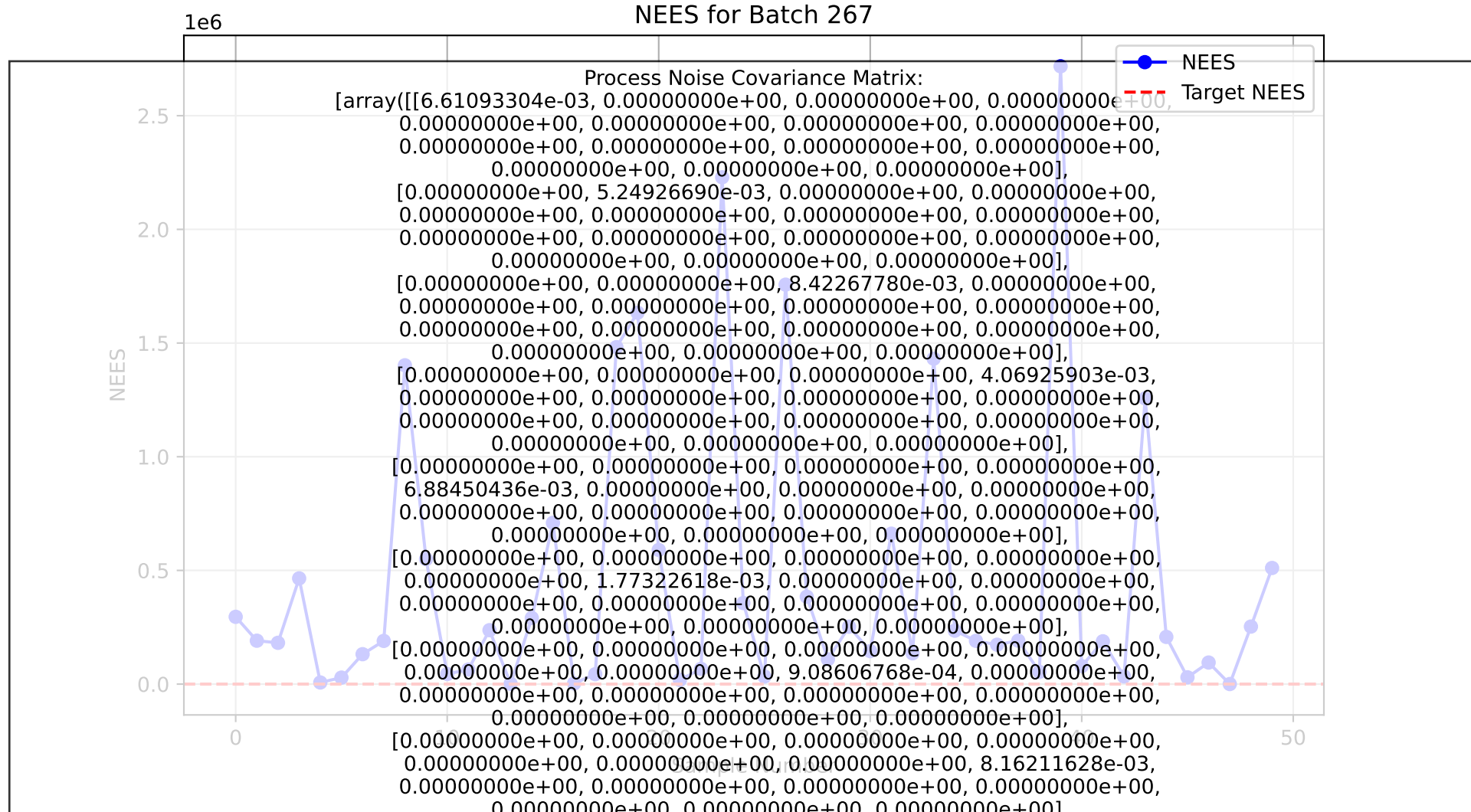

NEES for Batch 263
1e6
NEES
Target NEES
NEES
Process Noise Covariance Matrix:
[array([[9.53494747e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 1.30807467e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 2.50202051e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 6.19598406e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
8.16720944e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 6.25450829e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 4.28337596e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 2.75843237e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0
1
2
3
4
5
0
50

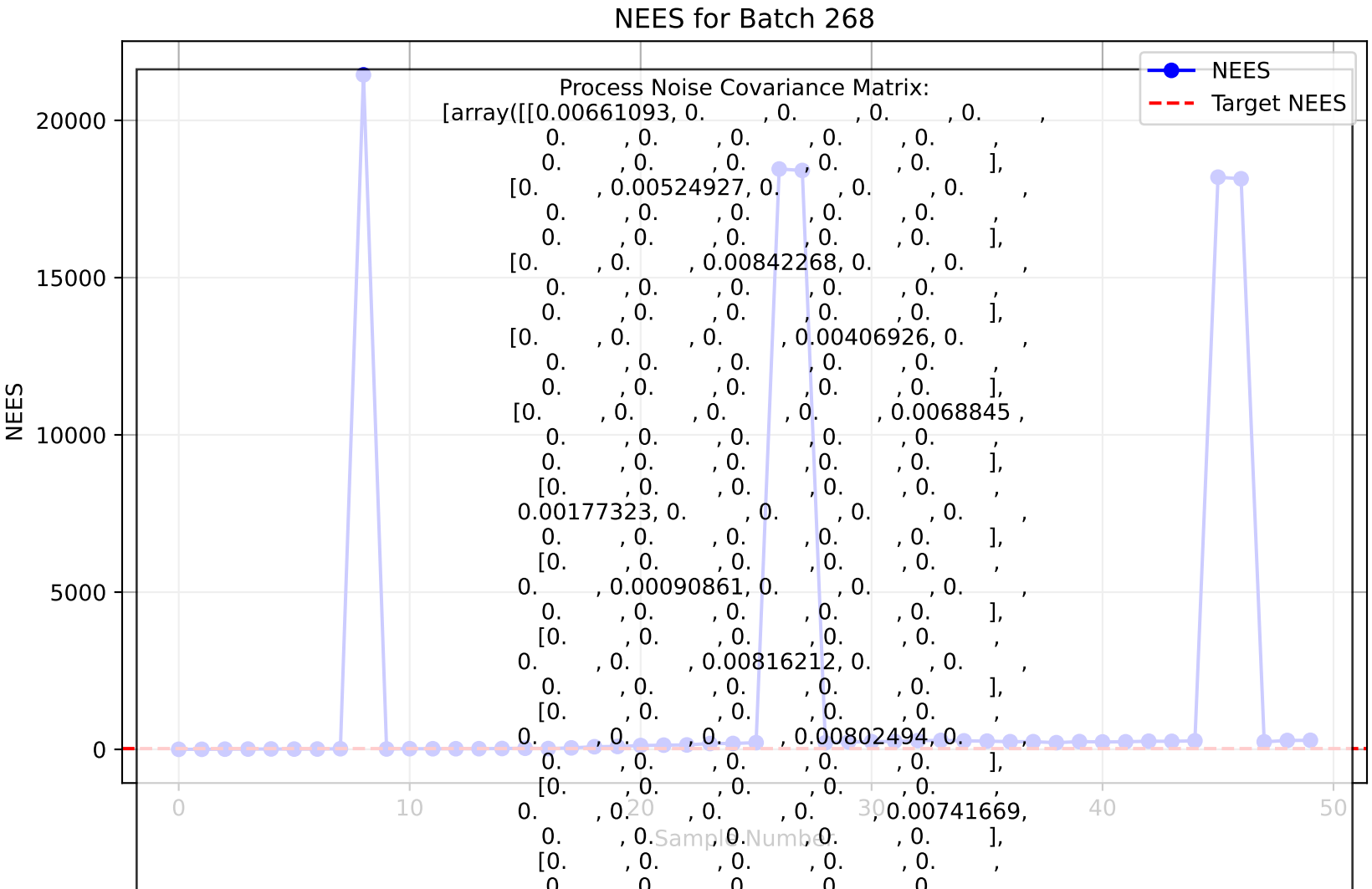

NEES for Batch 264
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.06 , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.03 , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0.06 , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.025, 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0.04 ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0.01 , 0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0.01 , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.02 , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.01 , 0. , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.01 , 0.],
[0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.015]]), array([[0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. , 0.],
[0. , 0.05 , 0. , 0. , 0. , 0. , 0. , 0. , 0.
0
100
200
300
400
500
600
0
10
20
30
40
50

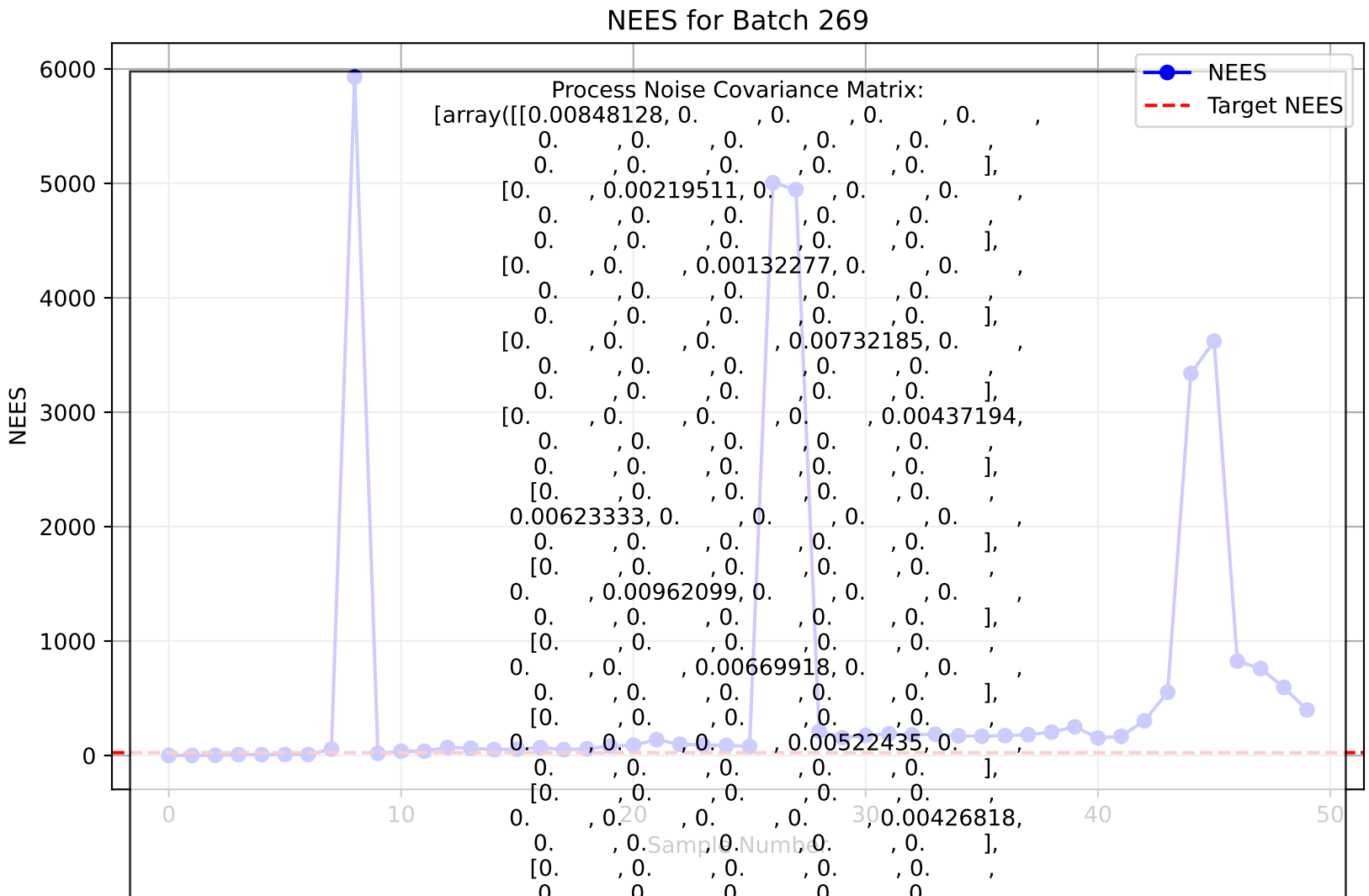


Process Noise Covariance Matrix:
[array([[9.53494747e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 1.30807467e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 2.50202051e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 6.19598406e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
8.16720944e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 6.25450829e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 4.28337596e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 2.75843237e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00]


NEES for Batch 266
1e8
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[1.00000000e-02, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 4.23856024e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 1.00000000e-02, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 1.00000000e-06,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
1.00000000e-02, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 1.82233551e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 1.00000000e-06, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 1.00000000e-06,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00]
NEES
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
50


NEES for Batch 267
1e6
NEES
Target NEES
Process Noise Covariance Matrix:
[array([[6.61093304e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 5.24926690e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 8.42267780e-03, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 4.06925903e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
6.88450436e-03, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 1.77322618e-03, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 9.08606768e-04, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00],
[0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 8.16211628e-03,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
0.00000000e+00, 0.00000000e+00, 0.00000000e+00
NEES
2.5
2.0
1.5
1.0
0.5
0.0
0
50


NEES for Batch 268
Process Noise Covariance Matrix:
[array([[0.00661093, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0.00524927, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.00842268, 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.00406926, 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.0068845 ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0.00177323, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0.00090861, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.00816212, 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.00802494, 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.00741669,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.
NEES
Target NEES
NEES
Sample Number
20000
15000
10000
5000
0
0
10
20
30
40
50


NEES for Batch 269
Process Noise Covariance Matrix:
[array([[0.00848128, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0.00219511, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0.00132277, 0. , 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0.00732185, 0. ,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0.00437194,
0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0.00623333, 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0.00962099, 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0.00669918, 0. , 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0.00522435, 0. ,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.00426818,
0. , 0. , 0. , 0. , 0.],
[0. , 0. , 0. , 0. , 0. ,
0. , 0. , 0. , 0. , 0.
NEES
Target NEES
NEES
Sample Number
0
1000
2000
3000
4000
5000
6000
0
10
20
30
40
50