```
In [1]:  import seaborn as sns
         import numpy as np
         import pandas as pd
         import matplotlib.pyplot as plt
         from scipy.optimize import curve_fit
         import os
```

```
In [2]:  #                                Net Flow v.s. Desolvation Pressure Plot, PP1

         fn = 'C:\\Users\███████████████████████████████████████████BCfolde

         df = pd.read_csv(fn)
         pp1 = df[df['System'] == 'PP1']
         print(df.columns)

         fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
         plt.suptitle('Net Flow vs. Pressure, PP1, Feb. 12, 2025',y=1.1, x=.46)


         for ax in fig.axes.flatten():
             ax.grid(color = 'black', linewidth =.3)
             ax.set_xticks(np.arange(0, 61, 5))
             ax.set_yticks(np.arange(0, 8, 1))
```
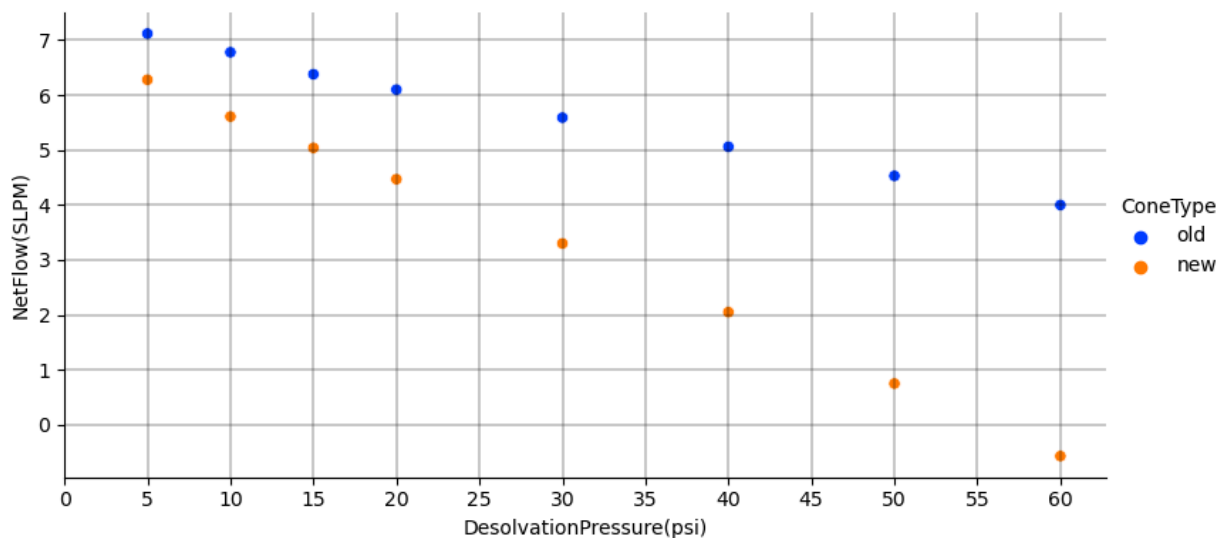
```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
       'ConeType', 'System'],
      dtype='object')
```


Net Flow vs. Pressure, PP1, Feb. 12, 2025

```
In [3]:  #                                Net Flow v.s. Desolvation Pressure Plot, PP2

         fn = 'C:\\Users\███████████████████████████████████████████BCfolde

         df = pd.read_csv(fn)
         pp1 = df[df['System'] == 'PP2']
         print(df.columns)

         fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
         plt.suptitle('Net Flow vs. Pressure, PP2, Feb. 14, 2025',y=1.1, x=.46)
```

```
for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(0, 8, 1))
```
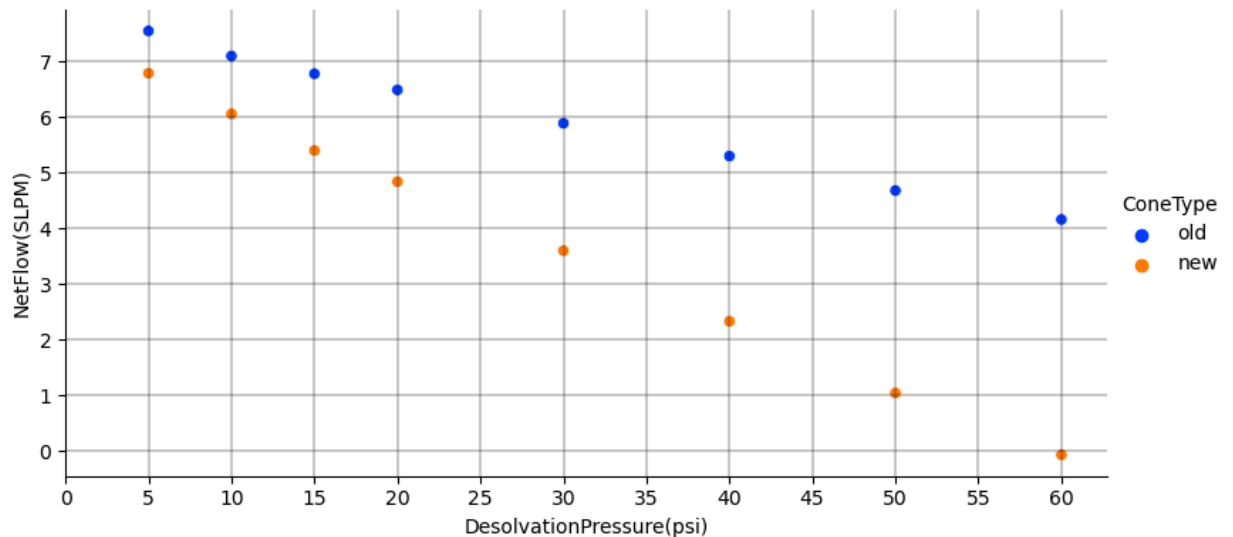
```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
       'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, PP2, Feb. 14, 2025

In [4]:
```
#                                        Net Flow v.s. Desolvation Pressure Plot, PP6

fn = 'C:\\Users\                                              BCfolde

df = pd.read_csv(fn)
pp1 = df[df['System'] == 'PP6']
print(df.columns)

fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
plt.suptitle('Net Flow vs. Pressure, PP6, Feb. 18, 2025',y=1.1, x=.46)


for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(0, 8, 1))
```
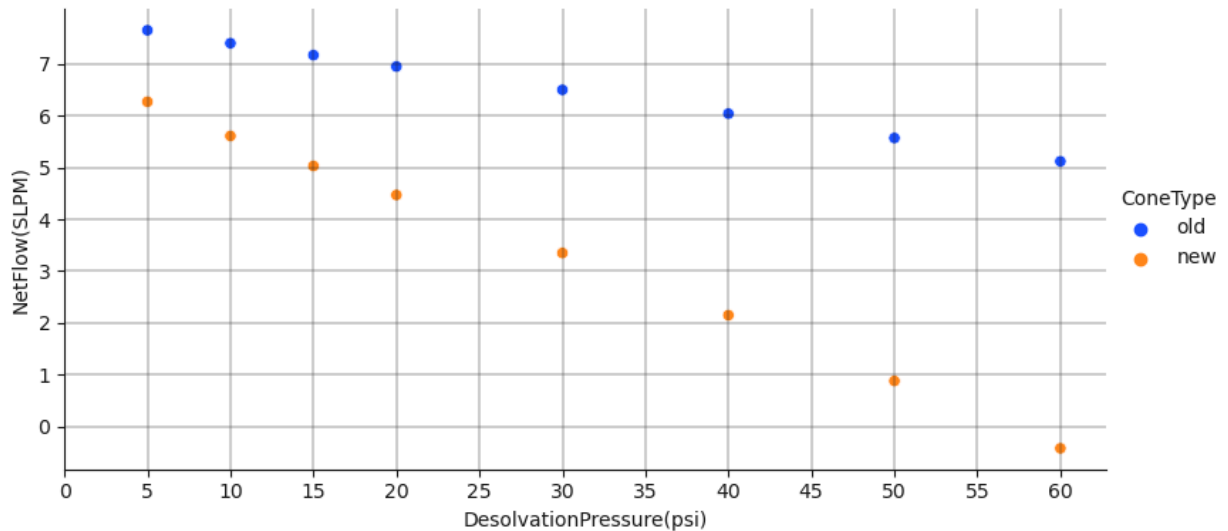
```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
       'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, PP6, Feb. 18, 2025

```
In [5]: #                                    Net Flow v.s. Desolvation Pressure Plot, demo

        fn = 'C:\\Users\▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮BCfolde

        df = pd.read_csv(fn)
        pp1 = df[df['System'] == 'demo']
        print(df.columns)

        fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
        plt.suptitle('Net Flow vs. Pressure, Demo, Feb. 13 2025',y=1.1, x=.46)


        for ax in fig.axes.flatten():
            ax.grid(color = 'black', linewidth =.3)
            ax.set_xticks(np.arange(0, 61, 5))
            ax.set_yticks(np.arange(0, 8, 1))

        Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
               'ConeType', 'System'],
              dtype='object')
```
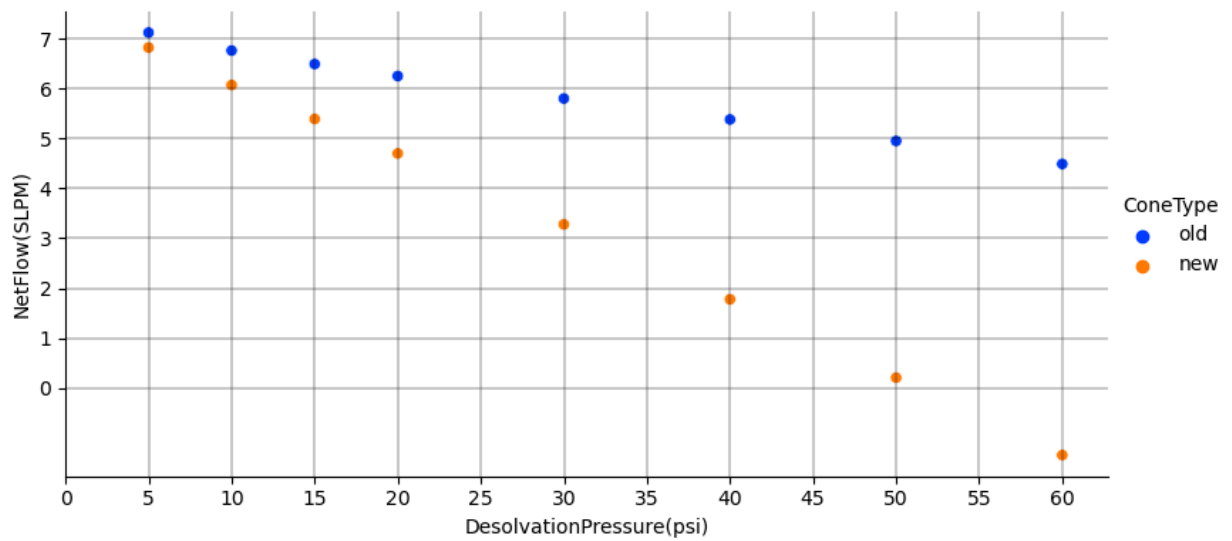
Net Flow vs. Pressure, Demo, Feb. 13 2025


```
In [6]:  #                          Net FLow v.s. Desolvation Pressure Plot, Old Cones

         fn = 'C:\\Users\█████████████████████████████████BCfolde

         df = pd.read_csv(fn)
         pp1 = df[df['ConeType'] == 'old']
         print(df.columns)

         fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
         plt.suptitle('Net Flow vs. Pressure, Old Cones',y=1.1, x=.46)


         for ax in fig.axes.flatten():
             ax.grid(color = 'black', linewidth =.3)
             ax.set_xticks(np.arange(0, 61, 5))
             ax.set_yticks(np.arange(3.5, 8, .25))
```
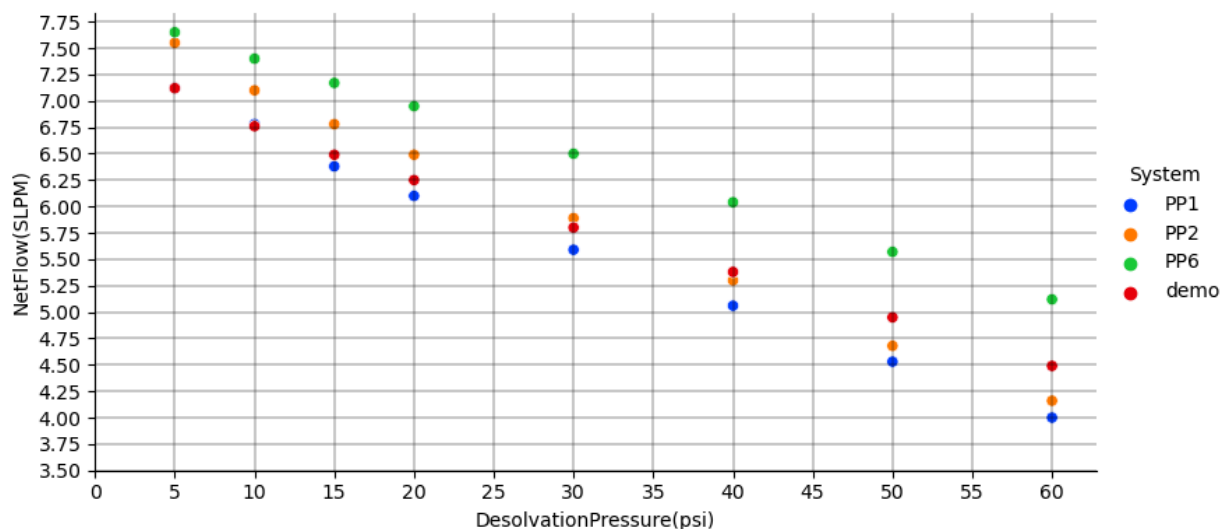
```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
       'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, Old Cones

```python
#                           Net Flow v.s. Desolvation Pressure Plot, New Cones

fn = 'C:\\Users\█████████████████████████████████████████\BCfolde

df = pd.read_csv(fn)
pp1 = df[df['ConeType'] == 'new']
print(df.columns)

fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
plt.suptitle('Net Flow vs. Pressure, New Cones',y=1.1, x=.46)


for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(-2, 8, .5))
```
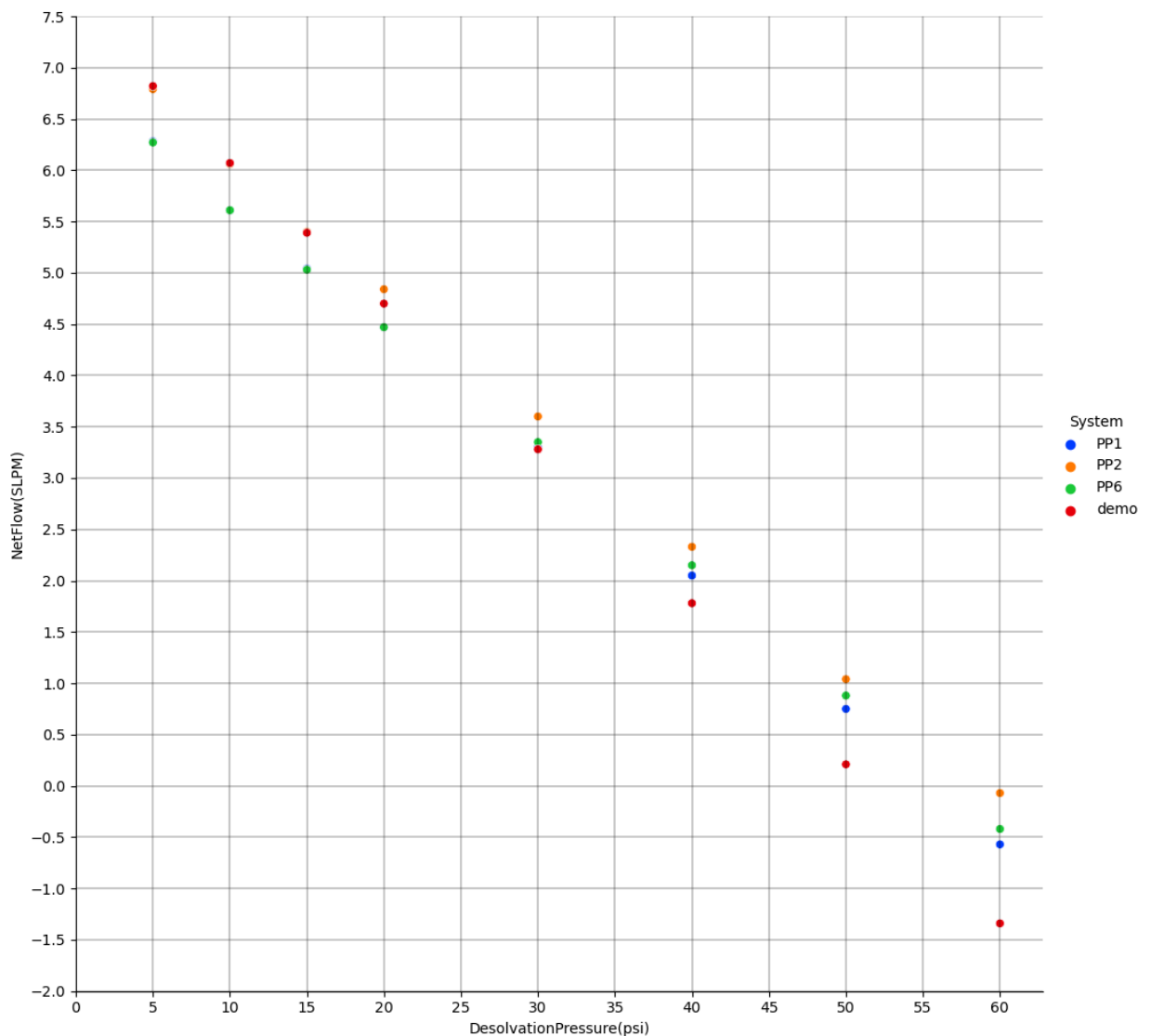
```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
       'ConeType', 'System'],
      dtype='object')
```


Net Flow vs. Pressure, New Cones

```
#                                        Net FLow v.s. Desolvation Pressure Plot, Both Cone

fn = 'C:\\Users\                                                      \BCfolde

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'br
plt.suptitle('Net Flow vs. Pressure, Both Cones',y=1.1, x=.46)


for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(-2, 8, .5))
```
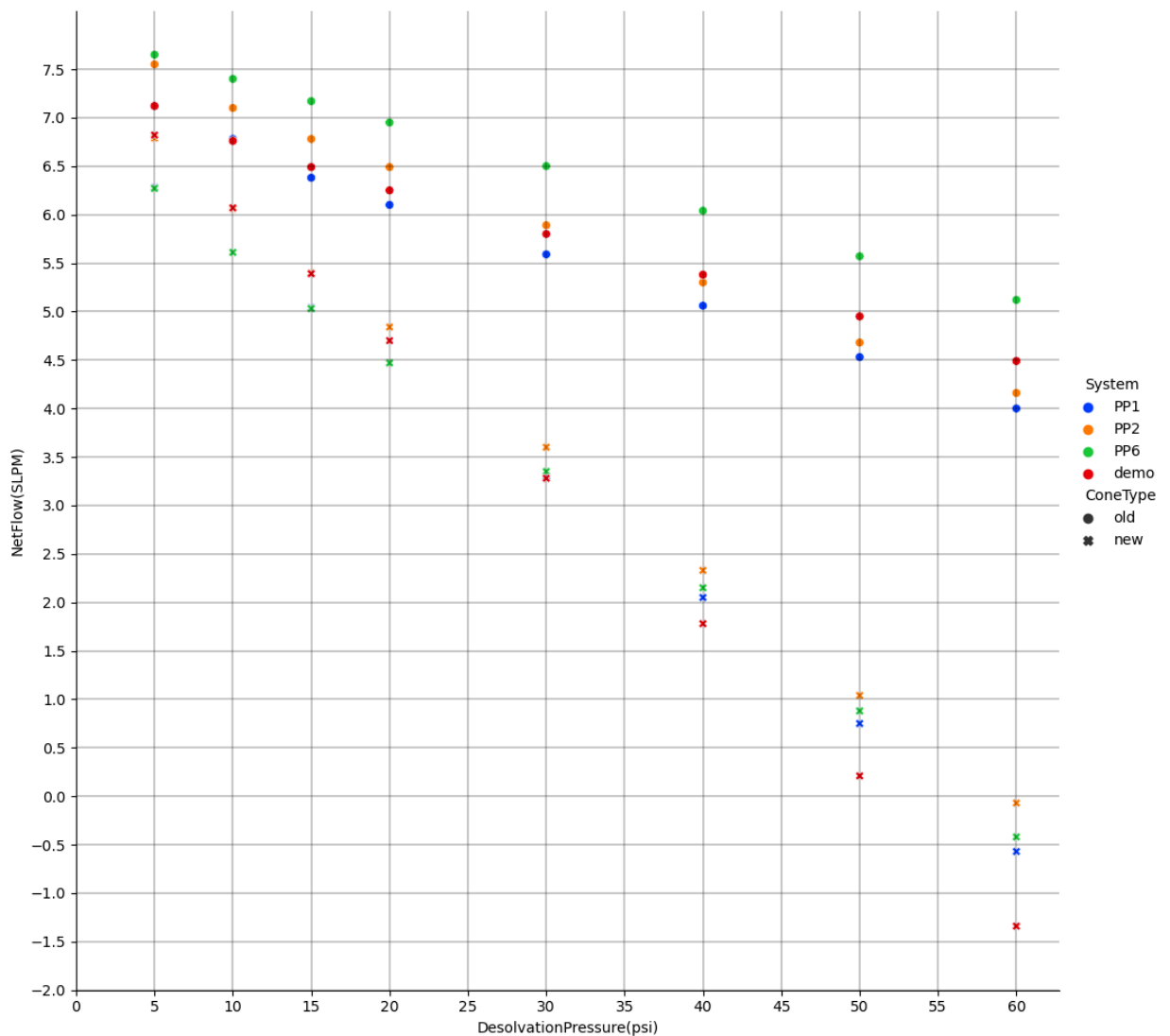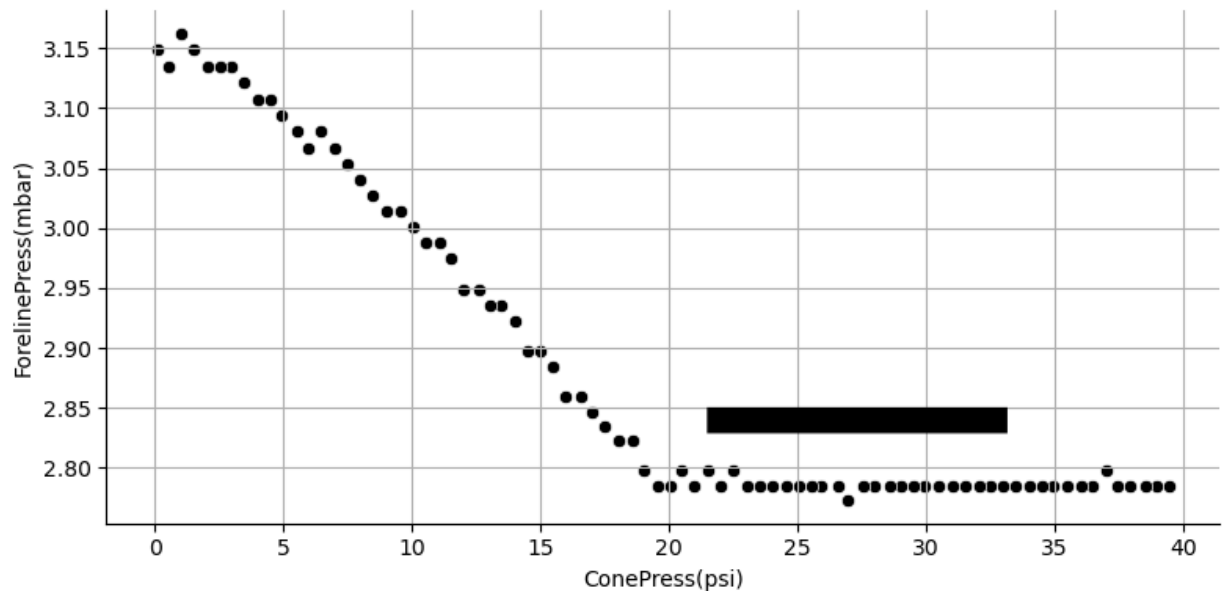
```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
       'ConeType', 'System'],
      dtype='object')
```


Net Flow vs. Pressure, Both Cones

```python
#                                    TEST CONE FLOW SCRIPT Demo, Old Cone
#                            Foreline Stabilized at 350c and 40psi before running sc

fn = '█████████████████████████████████████████████████████████\BCfolde

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', h
plt.suptitle('Test Cone Flow Script, Demo, Old Co                    '1.1)

for ax in fig.axes.flatten():
    ax.grid()
```

```
Index(['ConePress(psi)', 'ForelinePress(mbar)', '████████████████',
       'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, Demo, Old Cone, Feb. 12, 2025

In [10]:

```python
#                                    TEST CONE FLOW SCRIPT Demo, New Cone
#                            Foreline Stabilized at 350c and 40psi before running sc

fn = 'C:\\Users\\B.casillas_Rodriguez\\OneDrive - Bruker Physik GmbH\\Desktop\\BCfolde

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', h
plt.suptitle('Test Cone Flow Script, Demo, New Co                    '1.1)

for ax in fig.axes.flatten():
    ax.grid()
```
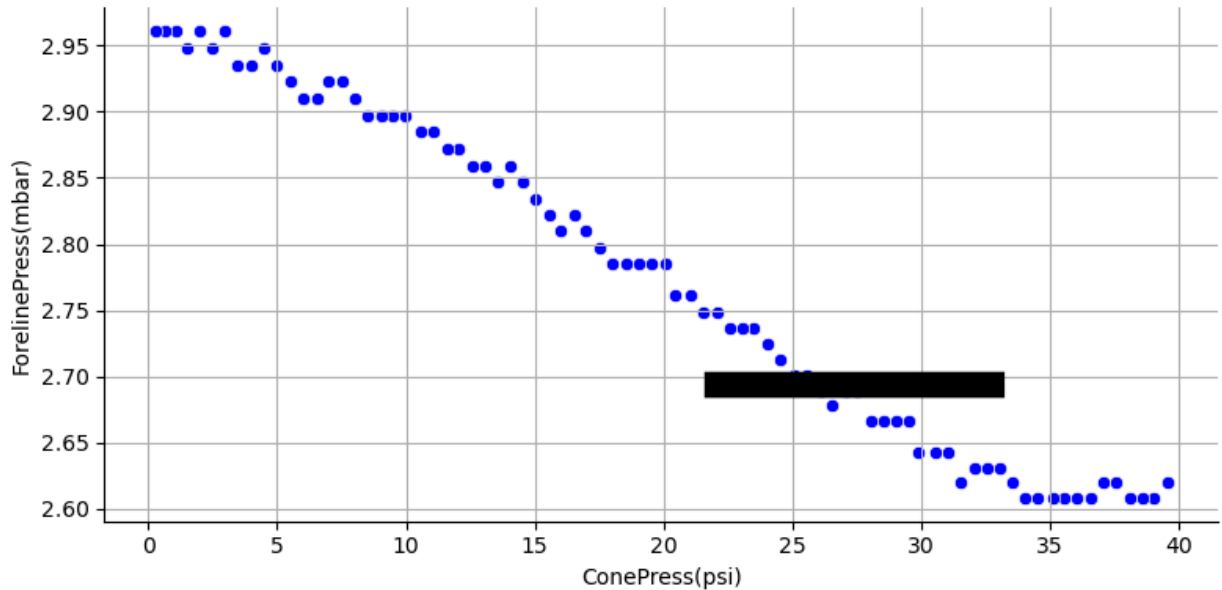
```
Index(['ConePress(psi)', 'ForelinePress(mbar)', '████████████████',
       'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, Demo, New Cone, Feb. 13, 2025


```
In [11]:  #                                    TEST CONE FLOW SCRIPT PP1, Old Cone
          #                          Foreline Stabilized at 350c and 40psi before running so

          fn = 'C:\\Users\\B.casillas_Rodriguez\\OneDrive - Bruker Physik GmbH\\Desktop\\BCfolde

          df = pd.read_csv(fn)
          print(df.columns)

          fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', h
          plt.suptitle('Test Cone Flow Script, PP1, Old Cone, Feb. 12, 2025',y=1.1)

          for ax in fig.axes.flatten():
              ax.grid()
```
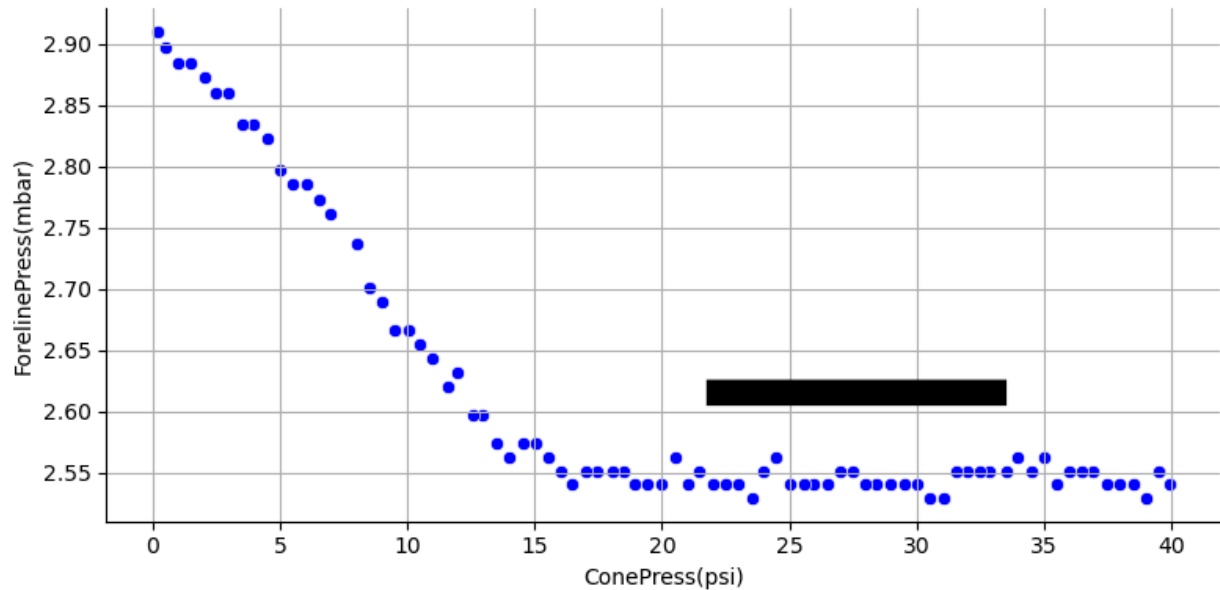
```
Index(['ConePress(psi)', 'ForelinePress(mbar)', 'XXXXXXXXXXXXXXX',
       'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, PP1, Old Cone, Feb. 12, 2025


```
In [12]:   #                                       TEST CONE FLOW SCRIPT PP1, New Cone
           #                           Foreline Stabilized at 350c and 40psi before running sc

           fn = 'C:\\Users\\B.casillas_Rodriguez\\OneDrive - Bruker Physik GmbH\\Desktop\\BCfolde

           df = pd.read_csv(fn)
           print(df.columns)

           fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', h
           plt.suptitle('Test Cone Flow Script, PP1, New Cone, Feb. 13, 2025',y=1.1)

           for ax in fig.axes.flatten():
               ax.grid()

       Index(['ConePress(psi)', 'ForelinePress(mbar)', '▨▨▨▨▨▨▨▨▨▨▨▨',
              'ConeTemp:350C '],
             dtype='object')
```
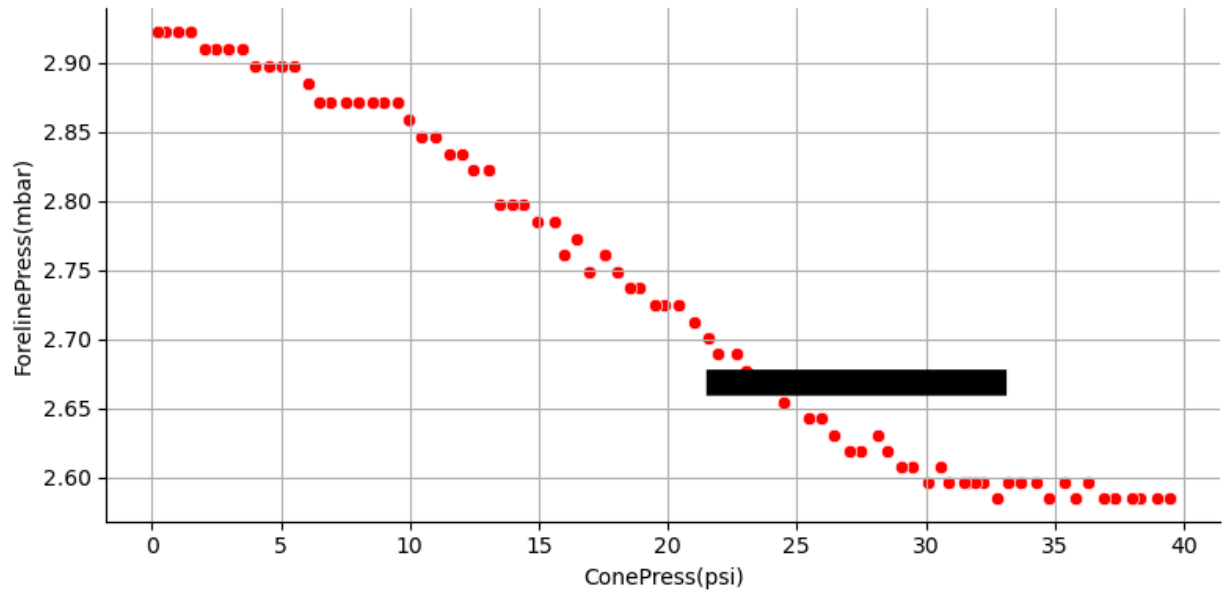
Test Cone Flow Script, PP1, New Cone, Feb. 13, 2025

In [13]:
```python
#                                          TEST CONE FLOW SCRIPT PP2, Old Cone
#                             Foreline Stabilized at 350c and 40psi before running sc

fn = 'C:\\Users\\B.casillas_Rodriguez\\OneDrive - Bruker Physik GmbH\\Desktop\\BCfolde

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', k
plt.suptitle('Test Cone Flow Script, PP2, Old Cone, Feb. 13, 2025',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()
```

```
Index(['ConePress(psi)', 'ForelinePress(mbar)', '▨▨▨▨▨▨▨▨▨▨▨▨',
       'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, PP2, Old Cone, Feb. 13, 2025


```
In [14]:  #                                      TEST CONE FLOW SCRIPT PP2, NEw Cone
          #                          Foreline Stabilized at 350c and 40psi before running sc

          fn = 'C:\\Users\\B.casillas_Rodriguez\\OneDrive - Bruker Physik GmbH\\Desktop\\BCfolde

          df = pd.read_csv(fn)
          print(df.columns)

          fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', h
          plt.suptitle('Test Cone Flow Script, PP2, New Cone, Feb. 14, 2025',y=1.1)

          for ax in fig.axes.flatten():
              ax.grid()

Index(['ConePress(psi)', 'ForelinePress(mbar)', '██████████████',
       'ConeTemp:350C '],
      dtype='object')
```
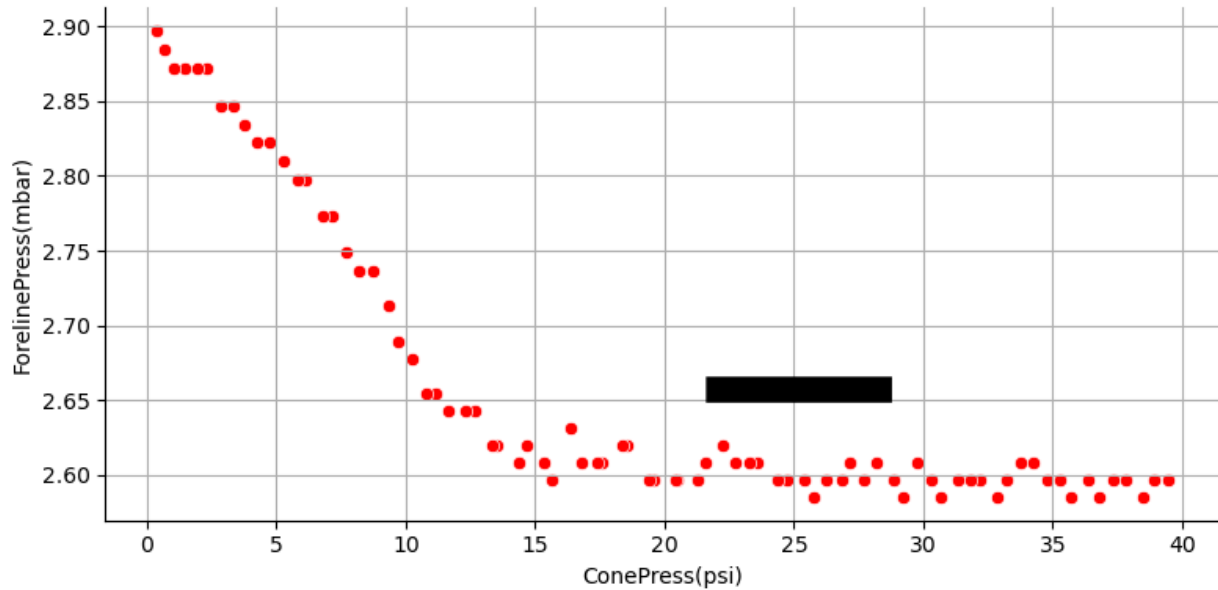
Test Cone Flow Script, PP2, New Cone, Feb. 14, 2025


```
In [15]:  #                                       TEST CONE FLOW SCRIPT PP6, Old Cone
          #                          Foreline Stabilized at 350c and 40psi before running sc

          fn = 'C:\\Users\\B.casillas_Rodriguez\\OneDrive - Bruker Physik GmbH\\Desktop\\BCfolde

          df = pd.read_csv(fn)
          print(df.columns)

          fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', h
          plt.suptitle('Test Cone Flow Script, PP6, Old Cone, Feb. 14, 2025',y=1.1)

          for ax in fig.axes.flatten():
              ax.grid()
```
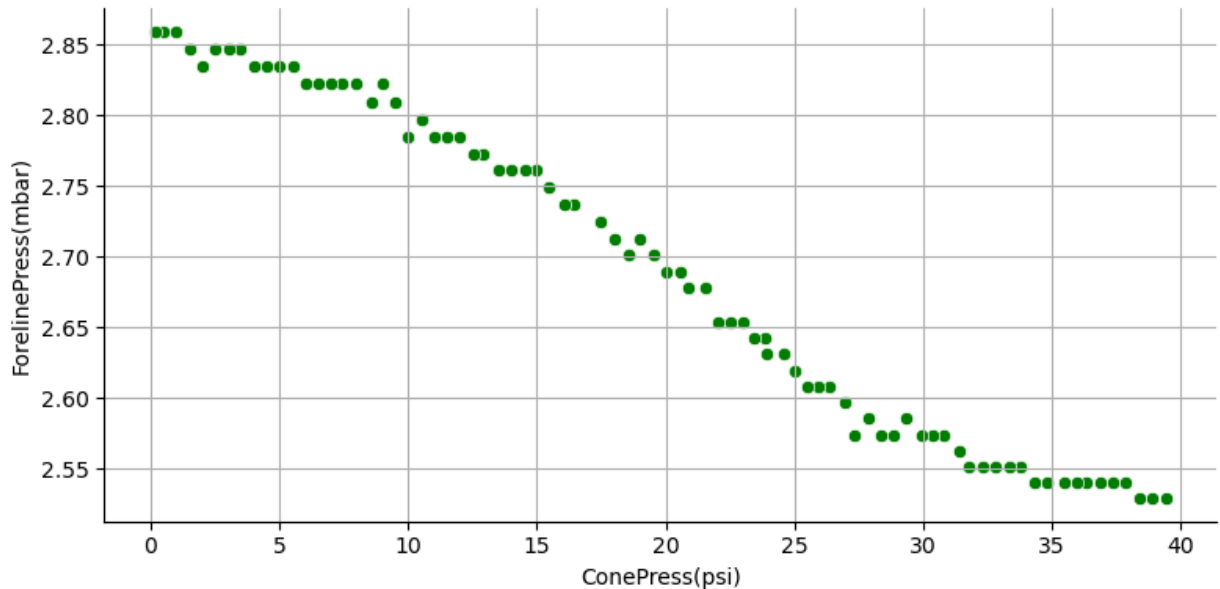
```
Index(['ConePress(psi)', 'ForelinePress(mbar)', '▨▨▨▨▨▨▨',
       'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, PP6, Old Cone, Feb. 14, 2025

In [16]:
```python
#                                          TEST CONE FLOW SCRIPT PP6, New Cone
#                          Foreline Stabilized at 350c and 40psi before running so

fn = 'C:\\Users                                                    \BCfolde

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', h
plt.suptitle('Test Cone Flow Script, PP6, New Cone, Feb. 14, 2025',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()
```
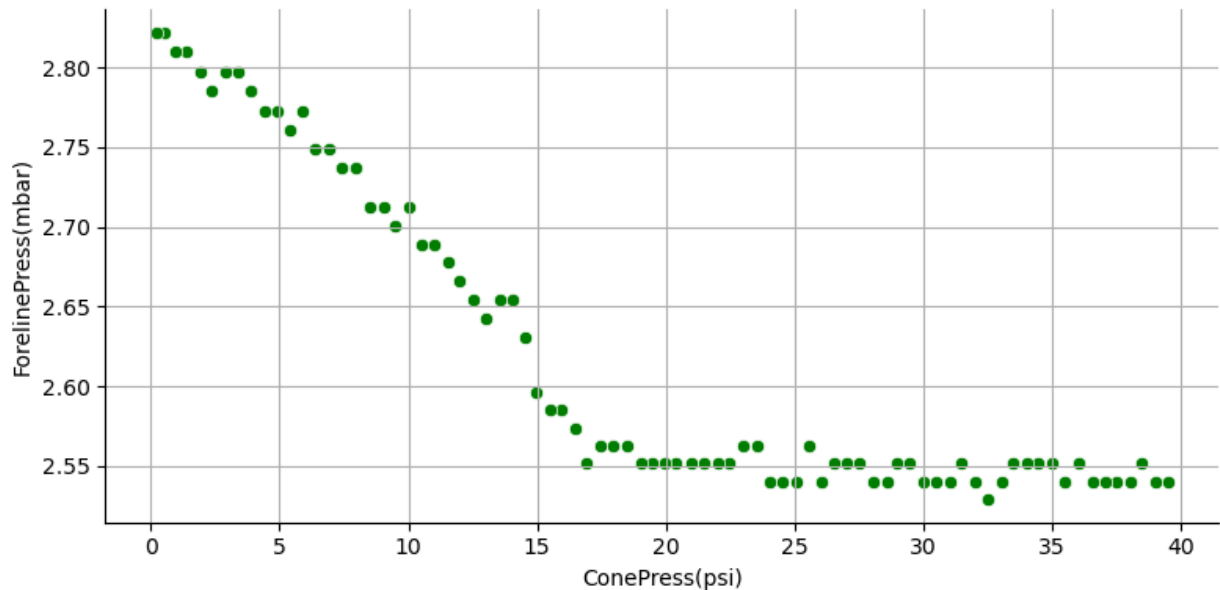
```
Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:1234',
       'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, PP6, New Cone, Feb. 14, 2025


```
In [17]:   #                                    Foreline Pressure v.s. Desolvation Pressure Plot,

           fn = 'C:\\Users\▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮BCfolde

           df = pd.read_csv(fn)
           pp1 = df[df['ConeType'] == 'old']
           print(df.columns)

           fig = sns.relplot(df, x= 'DesolvationPressure(psi)', y= 'ForelinePressure(mbar)', pale
           plt.suptitle('Foreline Pressure vs. Desolvation Pressure',y=1.1, x=.46)


           for ax in fig.axes.flatten():
               ax.grid(color = 'black', linewidth =.3)
               ax.set_xticks(np.arange(0, 61, 5))
           #    ax.set_yticks(np.arange(0, 3.6, .25))

           Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
                  'ConeType', 'System'],
                 dtype='object')
```
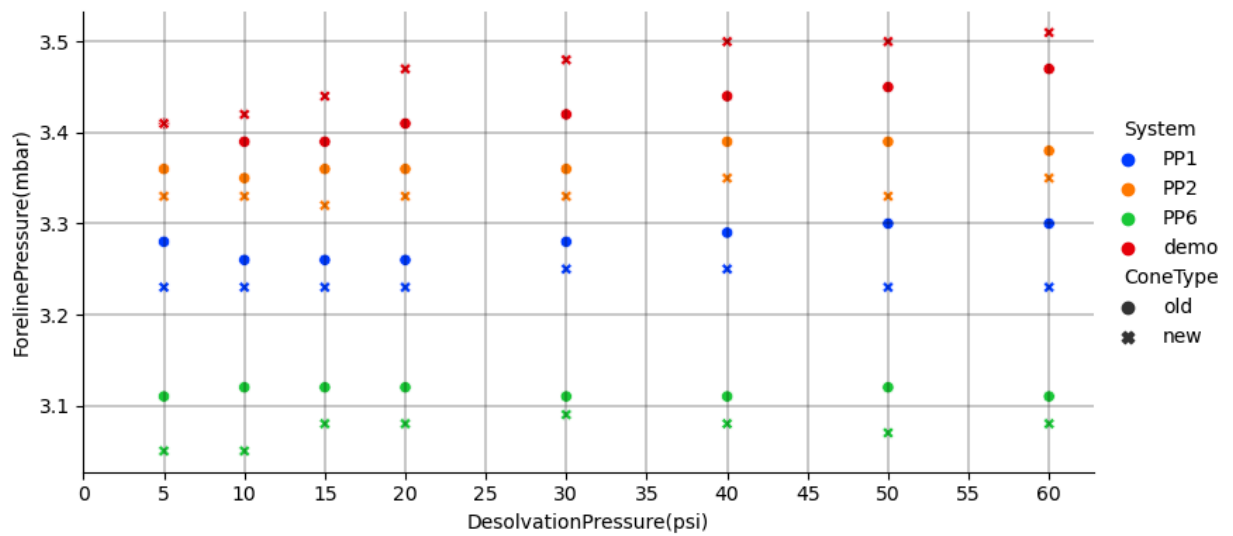
Foreline Pressure vs. Desolvation Pressure


```
In [46]:  #                                      TEST CONE FLOW SCRIPT Demo, Both Cones
          #                          Foreline Stabilized at 350c and 40psi before running sc

          fn = 'C:\\Users\█████████████████████████████████████████\BCfolde

          df = pd.read_csv(fn)
          print(df.columns)

          fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', hue = 'ConeType', k
          plt.suptitle('Test Cone Flow Script, DemoLab, Both Cones',y=1.1)

          for ax in fig.axes.flatten():
              ax.set_xticks(np.arange(-1, 40, 2))
              ax.grid()
```
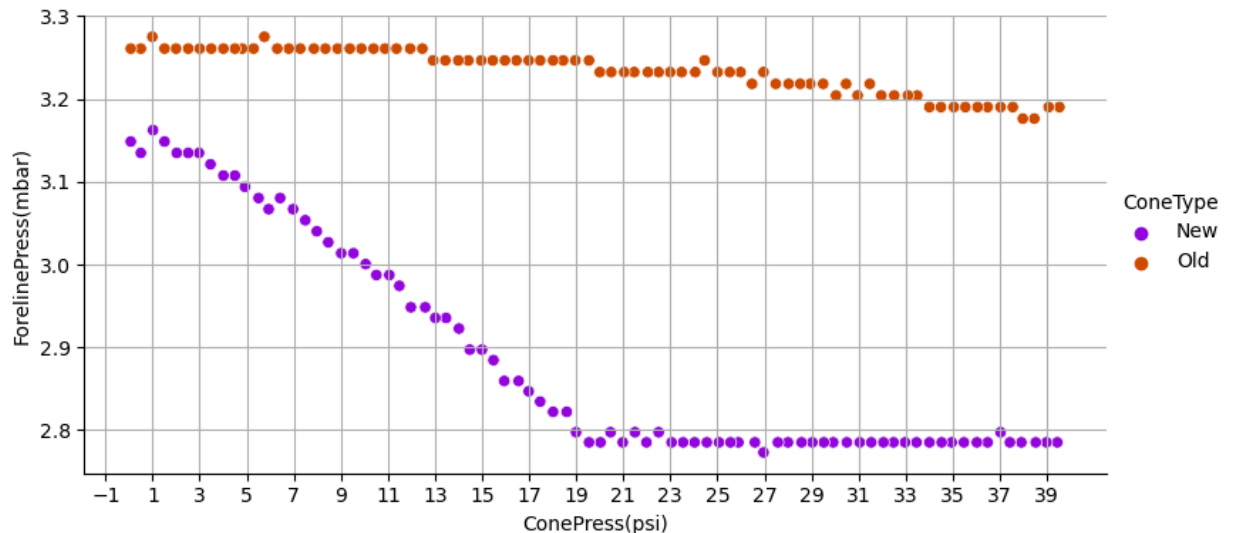
Index(['ConePress(psi)', 'ForelinePress(mbar)', 'ConeType'], dtype='object')

Test Cone Flow Script, DemoLab, Both Cones


```
In [19]:  #                                      TEST CONE FLOW SCRIPT PP1, Both Cones
          #                          Foreline Stabilized at 350c and 40psi before running sc
```
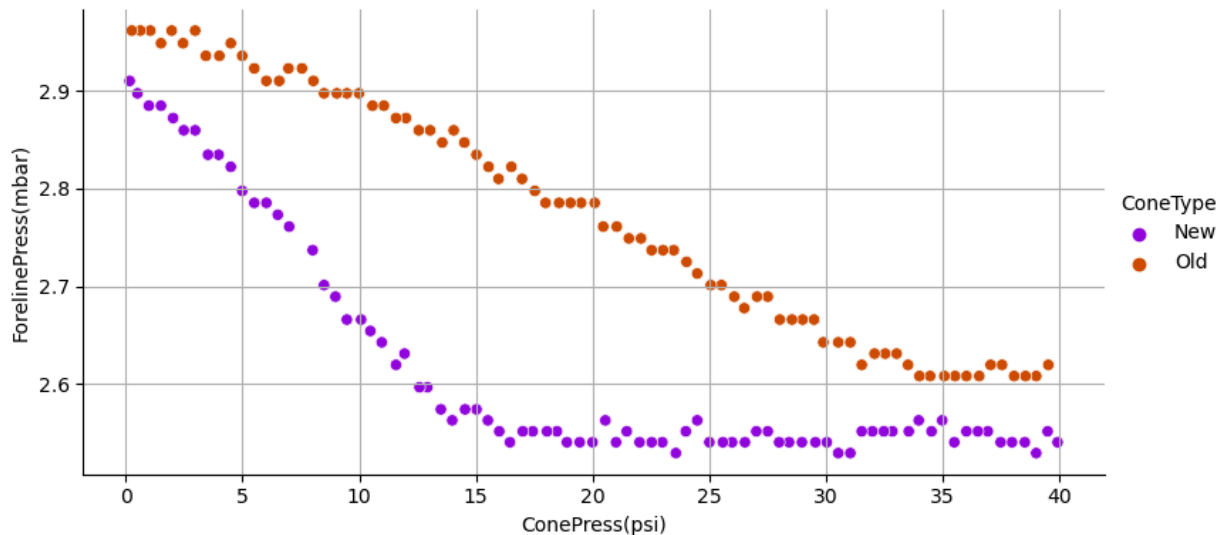
```
fn = 'C:\\Users\▮                                                    ▮BCfolde
```

```
df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', hue = 'ConeType', k
plt.suptitle('Test Cone Flow Script, PP1, Both Cones',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()
```

```
Index(['ConePress(psi)', 'ForelinePress(mbar)', 'ConeType'], dtype='object')
```

Test Cone Flow Script, PP1, Both Cones

In [42]:
```
#                                      TEST CONE FLOW SCRIPT PP2, Both Cones
#                      Foreline Stabilized at 350c and 40psi before running sc
```

```
fn = 'C:\\Users\▮                                                    ▮BCfolde
```
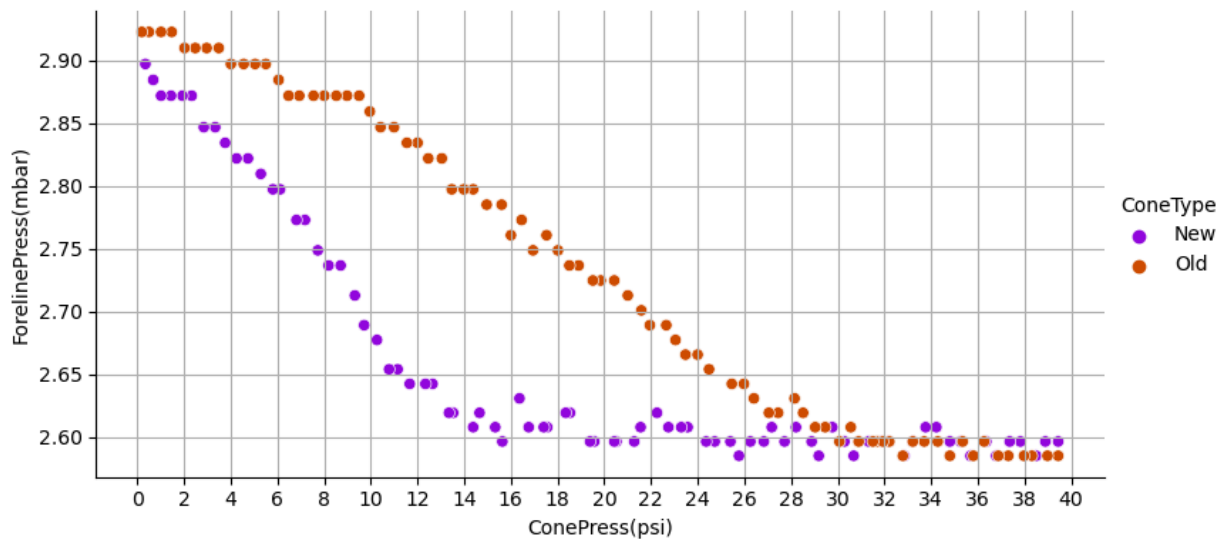
```
df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', hue = 'ConeType', k
plt.suptitle('Test Cone Flow Script, PP2, Both Cones',y=1.1)

for ax in fig.axes.flatten():
    ax.set_xticks(np.arange(0, 41, 2))
    ax.grid()
```

```
Index(['ConePress(psi)', 'ForelinePress(mbar)', 'ConeType'], dtype='object')
```

```
In [21]:  #                                      TEST CONE FLOW SCRIPT PP6, Both Cones
          #                      Foreline Stabilized at 350c and 40psi before running sc

          fn = 'C:\\Users\█████████████████████████████████████\BCfolde

          df = pd.read_csv(fn)
          print(df.columns)

          fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', hue = 'ConeType', k
          plt.suptitle('Test Cone Flow Script, PP6, Both Cones',y=1.1)

          for ax in fig.axes.flatten():
              ax.grid()
```
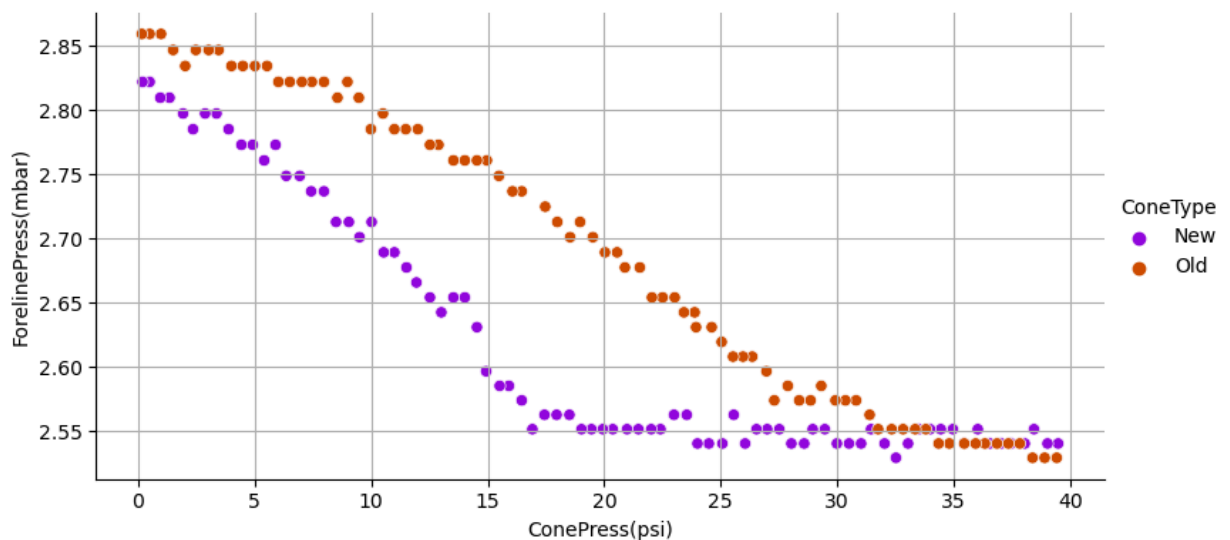
```
Index(['ConePress(psi)', 'ForelinePress(mbar)', 'ConeType'], dtype='object')
```

Test Cone Flow Script, PP6, Both Cones


```
In [38]:  fn = 'C:\\Users\█████████████████████████████████████BCfolde

          df = pd.read_csv(fn)
          dfdemo = df[df['System'] == 'Demo']
```

```
print(df.columns)

fig = sns.relplot(df,x = 'DesolvationPressure(psi)',y='NetFlow(SLPM)', hue = 'System',
plt.suptitle('NetFlow v.s. DesolvationPressure, ConeTemp = 350c, ExOFF',y=1.1)

for ax in fig.axes.flatten():
    ax.set_xticks(np.arange(-1, 62, 2))
    ax.set_yticks(np.arange(-10, 6, 1))
    ax.grid()
```

```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'Foreline(mbar)',
       'System'],
      dtype='object')
```


NetFlow v.s. DesolvationPressure, ConeTemp = 350c, ExOFF