In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
df=pd.read_csv(r"C:\Users\user\Downloads\9_bottle.csv").dropna(axis="columns")
df
```

```
C:\Users\user\AppData\Local\Temp\ipykernel_12280\199394916.py:1: DtypeWarnin
g: Columns (47,73) have mixed types. Specify dtype option on import or set lo
w_memory=False.
  df=pd.read_csv(r"C:\Users\user\Downloads\9_bottle.csv").dropna(axis="column
s")
```

Out[2]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	RecInd	R_Depth	R_PRES
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	3	0.0	0
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	3	8.0	8
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	7	10.0	10
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	3	19.0	19
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	7	20.0	20
...	...	...	...	...	...	...	...	...
864858	34404	864859	093.4 026.4	20-1611SR-MX-310-2239-09340264-0000A-7	0	7	0.0	0
864859	34404	864860	093.4 026.4	20-1611SR-MX-310-2239-09340264-0002A-3	2	3	2.0	2
864860	34404	864861	093.4 026.4	20-1611SR-MX-310-2239-09340264-0005A-3	5	3	5.0	5
864861	34404	864862	093.4 026.4	20-1611SR-MX-310-2239-09340264-0010A-3	10	3	10.0	10
864862	34404	864863	093.4 026.4	20-1611SR-MX-310-2239-09340264-0015A-3	15	3	15.0	15

864863 rows × 8 columns

In [3]:
```
df.head()
```

Out[3]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	RecInd	R_Depth	R_PRES
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	3	0.0	0
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	3	8.0	8
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	7	10.0	10
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	3	19.0	19
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	7	20.0	20

In [5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 864863 entries, 0 to 864862
Data columns (total 8 columns):
 #   Column    Non-Null Count   Dtype  
---  ------    --------------   -----  
 0   Cst_Cnt   864863 non-null  int64  
 1   Btl_Cnt   864863 non-null  int64  
 2   Sta_ID    864863 non-null  object 
 3   Depth_ID  864863 non-null  object 
 4   Depthm    864863 non-null  int64  
 5   RecInd    864863 non-null  int64  
 6   R_Depth   864863 non-null  float64
 7   R_PRES    864863 non-null  int64  
dtypes: float64(1), int64(5), object(2)
memory usage: 52.8+ MB
```

In [6]:
```
df.describe()
```

Out[6]:

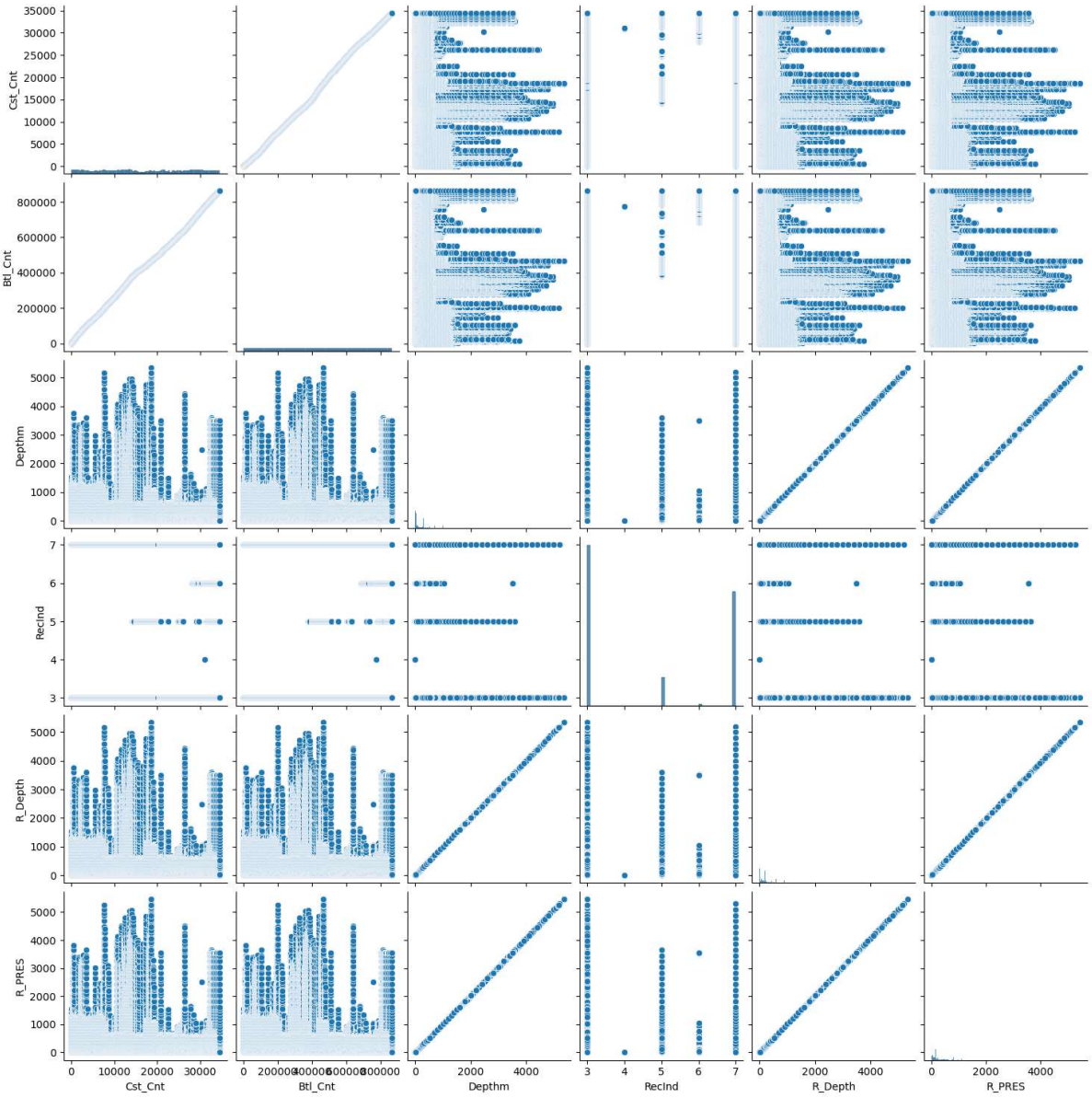
	Cst_Cnt	Btl_Cnt	Depthm	RecInd	R_Depth	R_PRE
count	864863.000000	864863.000000	864863.000000	864863.000000	864863.000000	864863.00000
mean	17138.790958	432432.000000	226.831951	4.700273	226.832495	228.39569
std	10240.949817	249664.587267	316.050259	1.877428	316.050007	319.45673
min	1.000000	1.000000	0.000000	3.000000	0.000000	0.00000
25%	8269.000000	216216.500000	46.000000	3.000000	46.000000	46.00000
50%	16848.000000	432432.000000	125.000000	3.000000	125.000000	126.00000
75%	26557.000000	648647.500000	300.000000	7.000000	300.000000	302.00000
max	34404.000000	864863.000000	5351.000000	7.000000	5351.000000	5458.00000

In [7]:
```
df.columns
```

Out[7]:
```
Index(['Cst_Cnt', 'Btl_Cnt', 'Sta_ID', 'Depth_ID', 'Depthm', 'RecInd',
       'R_Depth', 'R_PRES'],
      dtype='object')
```

In [8]:
```
sns.pairplot(df)
```

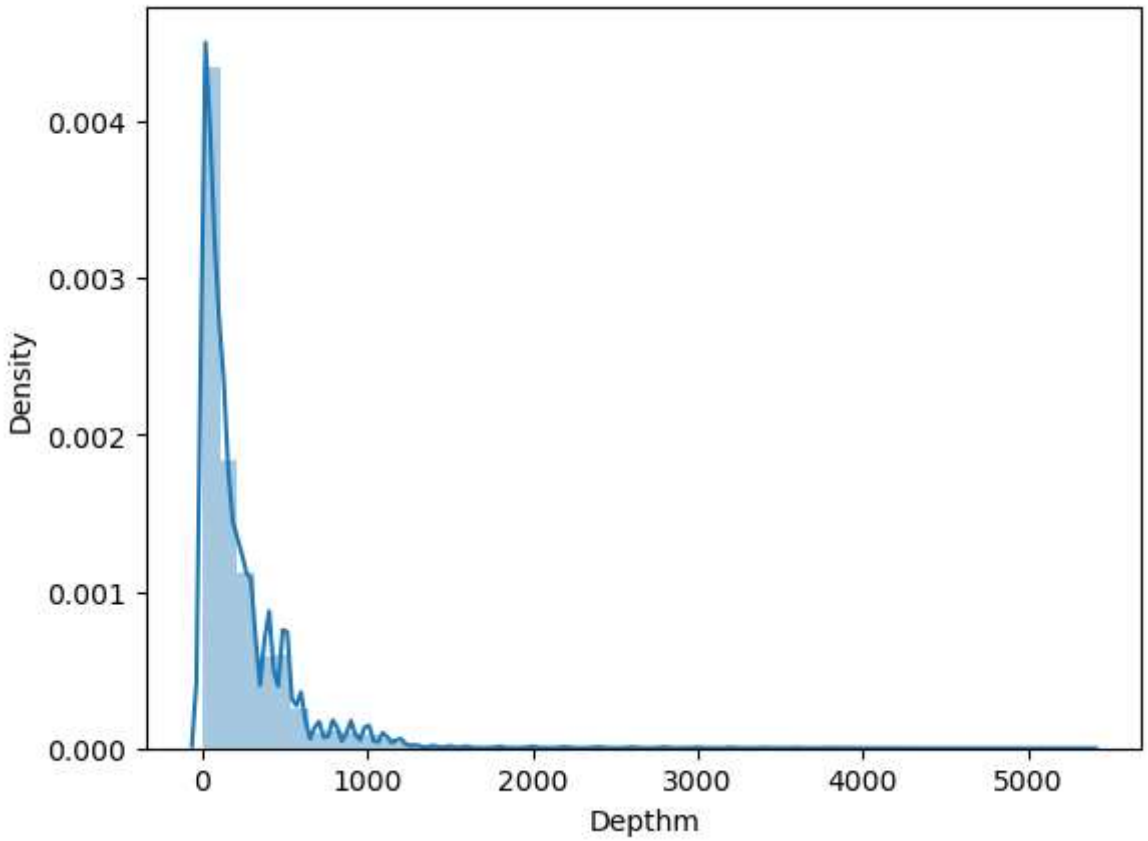
Out[8]:
```
<seaborn.axisgrid.PairGrid at 0x23e49086250>
```



In [9]:
```
sns.distplot(df["Depthm"])
```

```
C:\Users\user\AppData\Local\Temp\ipykernel_12280\1431388286.py:1: UserWarnin
g:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751 (https://gis
t.github.com/mwaskom/de44147ed2974457ad6372750bbe5751)

  sns.distplot(df["Depthm"])
```

Out[9]: <Axes: xlabel='Depthm', ylabel='Density'>

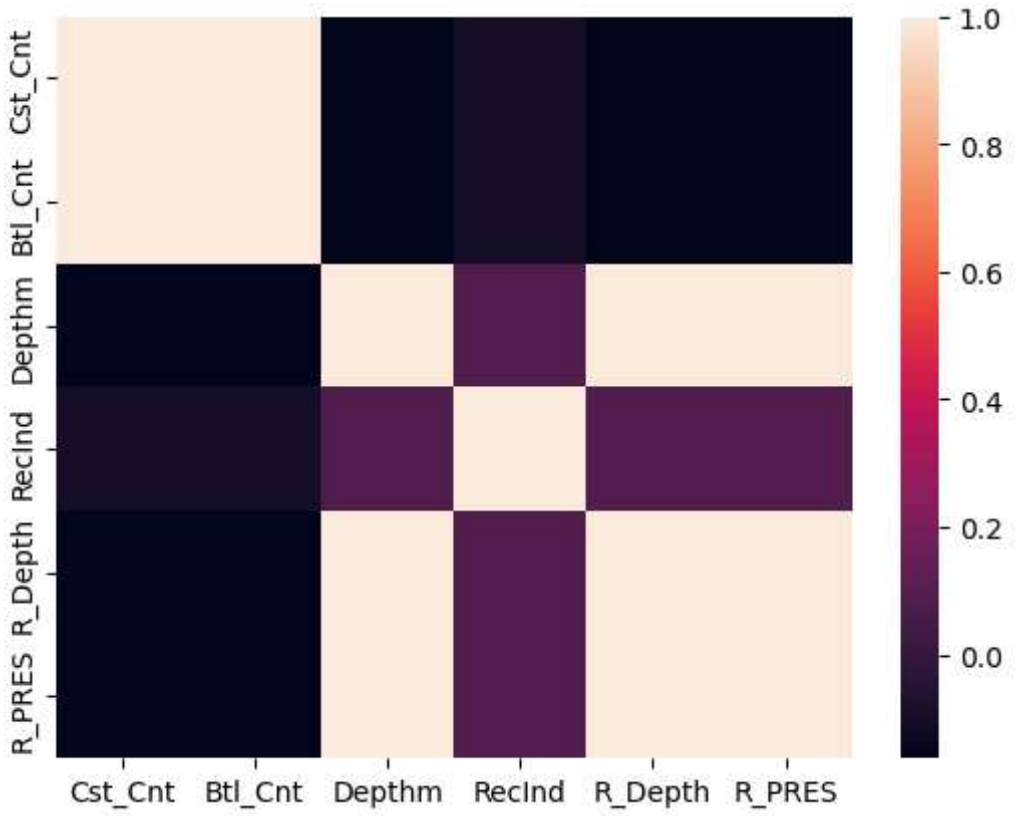


In [12]:
```
df1=df[['Cst_Cnt', 'Btl_Cnt', 'Sta_ID', 'Depth_ID','Depthm', 'RecInd',
       'R_Depth', 'R_PRES']]
```

In [13]:
```
sns.heatmap(df1.corr())
```

```
C:\Users\user\AppData\Local\Temp\ipykernel_12280\781785195.py:1: FutureWarnin
g: The default value of numeric_only in DataFrame.corr is deprecated. In a fu
ture version, it will default to False. Select only valid columns or specify
the value of numeric_only to silence this warning.
  sns.heatmap(df1.corr())
```

Out[13]: <Axes: >



In [14]:
```
x=df1[['Cst_Cnt','Btl_Cnt','RecInd','R_Depth','R_PRES']]
y=df1["Depthm"]
```

In [15]:
```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.3)
```

In [16]:
```
from sklearn.linear_model import LinearRegression
lr=LinearRegression()
lr.fit(x_train,y_train)
```

Out[16]:
```
▾ LinearRegression

LinearRegression()
```

In [17]:
```
print(lr.intercept_)
```

```
0.0028826297098021314
```

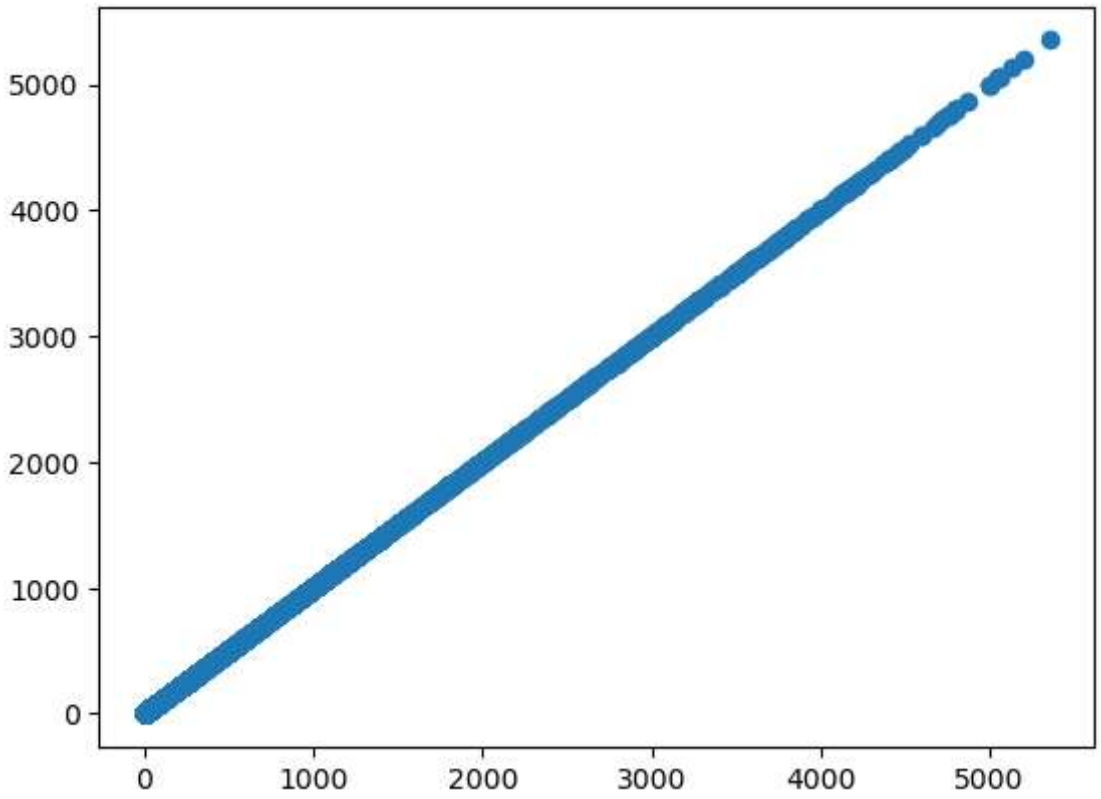
In [18]:
```
coeff = pd.DataFrame(lr.coef_,x.columns,columns=['Co-efficient'])
coeff
```

Out[18]:

	Co-efficient
Cst_Cnt	1.662677e-06
Btl_Cnt	-7.176589e-08
RecInd	-2.657331e-04
R_Depth	1.000299e+00
R_PRES	-2.953731e-04

In [19]:
```
prediction=lr.predict(x_test)
plt.scatter(y_test,prediction)
```

Out[19]:
```
<matplotlib.collections.PathCollection at 0x23e62ac6450>
```



In [20]:
```
print(lr.score(x_test,y_test))
```

```
0.9999999944698594
```

In [ ]: