

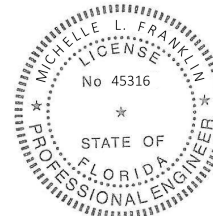


Hydraulic Analysis by HydraCALC

**Received after DRC Meeting  
to address DRC comments  
prior to the submission of a  
Building Permit Application.**

**1/27/2022**

SUMMERS FIRE SPRINKLERS, INC  
751 PARK OF COMMERCE DR, #100  
BOCA RATON, FL 33487  
MICHELLE MEISEL, P.E. #45316  
561-393-6718



Digitally signed  
by Michelle L.  
Franklin  
Date:  
2022.01.26  
19:47:10  
-05'00'

Job Name : Bldg#1 UNIT D Fire Plans-rev-calc  
Drawing : 1  
Location : 1 SOUTH RIVERSIDE DRIVE, POMPANO BEACH FLORIDA  
Remote Area : D  
Contract : BC922  
Data File : Bldg#1 UNIT D Fire Plans-rev-calc Area 4.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOMES Date - 1/2022  
Location - 1 SOUTH RIVERSIDE DRIVE, POMPANO BEACH FLORIDA  
Building - 1 System No. - D  
Contractor - SUMMERS FIRE SPRINKLERS, INC Contract No. - BC922  
Calculated By - CD Drawing No. - FP-2  
Construction: ( ) Combustible ( ) Non-Combustible Ceiling Height  
OCCUPANCY -

S Type of Calculation: ( ) NFPA 13 Residential (X) NFPA 13R ( ) NFPA 13D  
Y Number of Sprinklers Flowing: ( ) 1 ( ) 2 (X) 4 ( )  
S ( ) Other  
T ( ) Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - Gpm System Type  
Listed Pres. at Start Point - Psi (X) Wet ( ) Dry  
D MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction  
E Domestic Flow Added - Gpm Sprinkler or Nozzle  
S Additional Flow Added - Gpm Make TYCO Model LF II  
I Elevation at Highest Outlet - Feet Size 1/2" K-Factor 4.9  
G Note: Temperature Rating 175  
N

Calculation Gpm Required 62.30 At Test  
Summary C-Factor Used: Underground 140

W Water Flow Test:  
A Date of Test -  
T Time of Test -  
E Static (Psi) - 80  
R Residual (Psi) - 77  
Flow (Gpm) - 1306  
S Elevation - 2.6  
P Location:  
P  
L Source of Information:  
Y

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Tank or Reservoir:  
ap.  
lev.  
Well  
Proof Flow Gpm

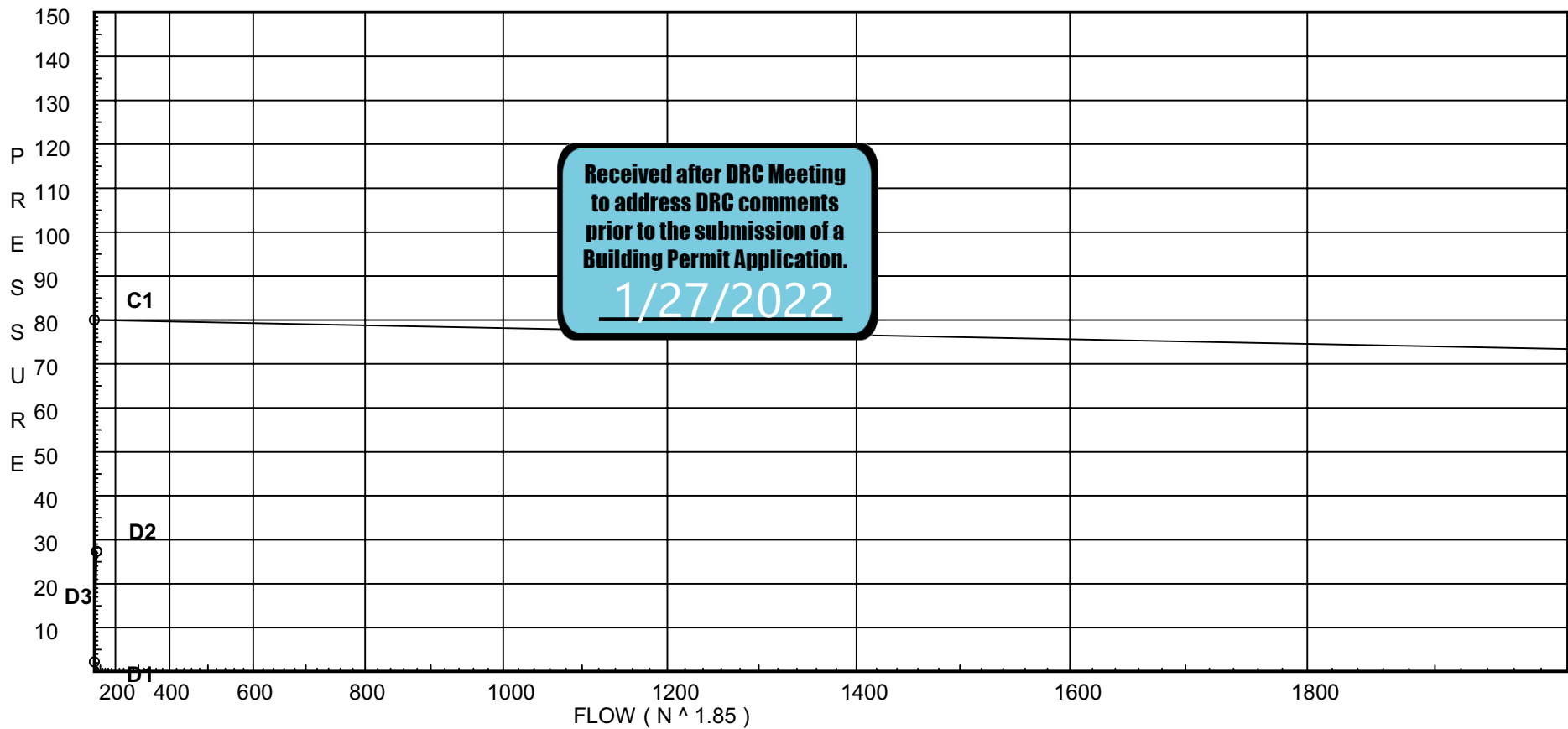
# Water Supply Curve

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City Water Supply:  
C1 - Static Pressure : 80  
C2 - Residual Pressure: 77  
C2 - Residual Flow : 1306

Demand:  
D1 - Elevation : 2.196  
D2 - System Flow : 57.303  
D2 - System Pressure : 27.300  
Hose ( Demand ) : 5  
D3 - System Demand : 62.303  
Safety Margin : 52.690



## Fittings Used Summary

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### Fitting Legend

| Abbrev. | Name                       | 1/2  | 3/4 | 1 | 1 1/4 | 1 1/2 | 2  | 2 1/2 | 3  | 3 1/2 | 4  | 5  | 6  | 8  | 10 | 12 | 14 | 16 | 18 | 20  | 24  |
|---------|----------------------------|--|-----|---|-------|-------|----|-------|----|-------|----|----|----|----|----|----|----|----|----|-----|-----|
| E       | NFPA 13 90' Standard Elbow | 1  | 2   | 2 | 3     | 4     | 5  | 6     | 7  | 8     | 10 | 12 | 14 | 18 | 22 | 27 | 35 | 40 | 45 | 50  | 61  |
| Fsp     | Flow Switch Potter VSR     | Fitting generates a Fixed Loss Based on Flow |     |   |       |       |    |       |    |       |    |    |    |    |    |    |    |    |    |     |     |
| T       | NFPA 13 90' Flow thru Tee  | 3  | 4   | 5 | 6     | 8     | 10 | 12    | 15 | 17    | 20 | 25 | 30 | 35 | 50 | 60 | 71 | 81 | 91 | 101 | 121 |
| Zaf     | Ames 3000SS                | Fitting generates a Fixed Loss Based on Flow |     |   |       |       |    |       |    |       |    |    |    |    |    |    |    |    |    |     |     |

### Units Summary

Diameter Units      Inches  
Length Units      Feet  
Flow Units      US Gallons per Minute  
Pressure Units      Pounds per Square

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Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with \*. The fittings marked with a \* show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a \* will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

# Pressure / Flow Summary - STANDARD

SUMMERS FIRE SPRINKLERS, INC  
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| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density | Area | Press Req. |
|----------|-----------|--------|-----------|----|-------------|---------|------|------------|
| 27       | 7.67      | 4.9    | 7.0       | na | 12.96       | 0.05    | 171  | 7.0        |
| S16      | 8.5       |        | 6.78      | na |             |         |      |            |
| S15      | 8.5       |        | 7.09      | na |             |         |      |            |
| 28       | 8.5       |        | 10.07     | na |             |         |      |            |
| 29       | 8.5       |        | 10.9      | na |             |         |      |            |
| TOR4     | 8.5       |        | 12.3      | na |             |         |      |            |
| BOR4     | -1.5      |        | 21.56     | na |             |         |      |            |
| 4        | -1.5      |        | 21.95     | na |             |         |      |            |
| U19      | -2.5      |        | 22.41     | na |             |         |      |            |
| U18      | -2.5      |        | 22.65     | na |             |         |      |            |
| U17      | -2.5      |        | 23.69     | na |             |         |      |            |
| U14      | -2.5      |        | 23.7      | na |             |         |      |            |
| U13      | -2.5      |        | 23.7      | na |             |         |      |            |
| U10      | -2.5      |        | 23.75     | na |             |         |      |            |
| U9       | -2.5      |        | 23.75     | na |             |         |      |            |
| U6       | -2.5      |        | 23.76     | na |             |         |      |            |
| U5       | -2.5      |        | 23.8      | na |             |         |      |            |
| U4       | -2.5      |        | 23.84     | na |             |         |      |            |
| BK4      | -2.5      |        | 23.86     | na |             |         |      |            |
| BK3      | 1.5       |        | 27.55     | na |             |         |      |            |
| BK2      | 1.5       |        | 27.59     | na |             |         |      |            |
| BK1      | -2.5      |        | 29.34     | na |             |         |      |            |
| U3       | -2.5      |        | 29.36     | na |             |         |      |            |
| U2       | -2.5      |        | 29.37     | na |             |         |      |            |
| U1       | -2.5      |        | 29.43     | na |             |         |      |            |
| 6        | -2.5      |        |           |    |             |         |      |            |
| 7        | -2.5      |        |           |    |             |         |      |            |
| TEST     | 2.6       |        |           |    | 5.0         |         |      |            |
| 30       | 7.67      | 4.9    |           |    | 13.08       | 0.05    | 160  | 7.0        |
| 31       | 7.67      | 4.9    |           |    | 15.33       | 0.05    | 160  | 7.0        |
| S14      | 8.5       |        |           |    |             |         |      |            |
| 32       | 7.67      | 4.9    |           |    | 15.93       | 0.05    | 171  | 7.0        |
| S13      | 8.5       |        |           |    |             |         |      |            |

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The maximum velocity is 12.05 and it occurs in the pipe between nodes 29 and TOR4

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt       | Nom<br>Act    | Fitting<br>or<br>Eqiv | Len    | Pipe<br>Ftngs<br>Total     | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf           | ***** | Notes                             | ***** |
|----------------------|----------------|-----------|----------------|---------------|-----------------------|--------|----------------------------|----------------|--------------------------|-------|-----------------------------------|-------|
| 27<br>to<br>S16      | 7.67<br>8.5    | 4.90      | 12.96<br>12.96 | 1<br>1.101    | E                     | 3.825  | 0.830<br>3.825<br>4.655    | 150            | 7.000<br>-0.359<br>0.142 |       | Vel = 4.37                        |       |
| S16<br>to<br>S15     | 8.5<br>8.5     |           | 0.0<br>12.96   | 1<br>1.101    |                       |        | 10.000<br>10.000           | 150            | 6.783<br>0.0<br>0.305    |       | Vel = 4.37                        |       |
| S15<br>to<br>28      | 8.5<br>8.5     |           | 13.08<br>26.04 | 1<br>1.101    | 2E                    | 7.65   | 19.230<br>7.650<br>26.880  | 150            | 7.088<br>0.0<br>2.980    |       | Vel = 8.78                        |       |
| 28<br>to<br>29       | 8.5<br>8.5     |           | 15.33<br>41.37 | 1.25<br>1.394 |                       |        | 10.000<br>10.000           | 150            | 10.068<br>0.0<br>0.828   |       | Vel = 8.70                        |       |
| 29<br>to<br>TOR4     | 8.5<br>8.5     |           | 15.93<br>57.3  | 1.25<br>1.394 | E                     | 4.762  | 4.500<br>4.761<br>9.261    | 150            | 10.896<br>0.0<br>1.400   |       | Vel = 12.05                       |       |
| TOR4<br>to<br>BOR4   | 8.5<br>-1.5    |           | 0.0<br>57.3    | 1.25<br>1.44  | Fsp                   | 0.0    | 10.000<br>10.000           | 120            | 12.296<br>7.331<br>1.937 |       | * * Fixed Loss = 3<br>Vel = 11.26 |       |
| BOR4<br>to<br>4      | -1.5<br>-1.5   |           | 0.0<br>57.3    | 2<br>2.15     |                       |        | 120<br>0.0272<br>120       | 120            | 21.564<br>0.0<br>21.946  |       | Vel = 5.03                        |       |
| 4<br>to<br>U19       | -1.5<br>-2.5   |           | 0.0<br>57.3    | 2<br>2.15     |                       |        | 120<br>0.0280<br>120       | 120            | 21.946<br>0.433<br>0.028 |       | Vel = 5.03                        |       |
| U19<br>to<br>U18     | -2.5<br>-2.5   |           | 0.0<br>57.3    | 2<br>2.157    | E                     | 6.153  | 2.850<br>6.153<br>9.003    | 120            | 22.407<br>0.0<br>0.245   |       | Vel = 5.03                        |       |
| U18<br>to<br>U17     | -2.5<br>-2.5   |           | 0.0<br>57.3    | 2<br>2.157    | 2E                    | 12.307 | 25.690<br>12.307<br>37.997 | 120            | 22.652<br>0.0<br>1.036   |       | Vel = 5.03                        |       |
| U17<br>to<br>U14     | -2.5<br>-2.5   |           | 0.0<br>57.3    | 4<br>4.1      |                       |        | 6.930<br>6.930             | 120            | 23.688<br>0.0<br>0.008   |       | Vel = 1.39                        |       |
| U14<br>to<br>U13     | -2.5<br>-2.5   |           | 0.0<br>57.3    | 4<br>4.1      |                       |        | 1.870<br>1.870             | 120            | 23.696<br>0.0<br>0.002   |       | Vel = 1.39                        |       |
| U13<br>to<br>U10     | -2.5<br>-2.5   |           | 0.0<br>57.3    | 4<br>4.1      |                       |        | 39.360<br>39.360           | 120            | 23.698<br>0.0<br>0.047   |       | Vel = 1.39                        |       |
| U10<br>to<br>U9      | -2.5<br>-2.5   |           | 0.0<br>57.3    | 4<br>4.1      |                       |        | 1.280<br>1.280             | 120            | 23.745<br>0.0<br>0.002   |       | Vel = 1.39                        |       |
| U9<br>to<br>U6       | -2.5<br>-2.5   |           | 0.0<br>57.3    | 4<br>4.1      |                       |        | 7.700<br>7.700             | 120            | 23.747<br>0.0<br>0.009   |       | Vel = 1.39                        |       |
| U6<br>to<br>U5       | -2.5<br>-2.5   |           | 0.0<br>57.3    | 4<br>4.1      | E                     | 10.928 | 24.150<br>10.928<br>35.078 | 120            | 23.756<br>0.0<br>0.042   |       | Vel = 1.39                        |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt      | Nom<br>Act | Fitting<br>or<br>Eqiv | Len    | Pipe<br>Ftngs<br>Total     | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf            | ***** | Notes                                | ***** |
|----------------------|----------------|-----------|---------------|------------|-----------------------|--------|----------------------------|----------------|---------------------------|-------|--------------------------------------|-------|
| U5<br>to<br>U4       | -2.5<br>-2.5   |           | 0.0<br>57.3   | 4<br>4.1   |                       |        | 33.860<br>33.860           | 120<br>0.0012  | 23.798<br>0.0<br>0.040    |       | Vel = 1.39                           |       |
| U4<br>to<br>BK4      | -2.5<br>-2.5   |           | 0.0<br>57.3   | 4<br>4.1   | E                     | 10.928 | 6.510<br>10.928<br>17.438  | 120<br>0.0012  | 23.838<br>0.0<br>0.021    |       | Vel = 1.39                           |       |
| BK4<br>to<br>BK3     | -2.5<br>1.5    |           | 0.0<br>57.3   | 4<br>4.1   | Zaf                   | 0.0    | 4.000<br>4.000             | 120<br>0.0012  | 23.859<br>3.683<br>0.005  |       | * * Fixed Loss = 5.416<br>Vel = 1.39 |       |
| BK3<br>to<br>BK2     | 1.5<br>1.5     |           | 0.0<br>57.3   | 4<br>4.1   | 2E                    | 21.855 | 13.160<br>21.855<br>35.015 | 120<br>0.0012  | 27.547<br>0.0<br>0.042    |       | Vel = 1.39                           |       |
| BK2<br>to<br>BK1     | 1.5<br>-2.5    |           | 0.0<br>57.3   | 4<br>4.1   | E                     | 10.928 | 4.000<br>10.928<br>14.928  | 120<br>0.0012  | 27.589<br>1.732<br>0.018  |       | Vel = 1.39                           |       |
| BK1<br>to<br>U3      | -2.5<br>-2.5   |           | 0.0<br>57.3   | 4<br>4.1   | E                     | 14.534 | 5.380<br>14.534            | 140<br>0.0009  | 29.339<br>0.0<br>0.018    |       | Vel = 1.39                           |       |
| U3<br>to<br>U2       | -2.5<br>-2.5   |           | 0.0<br>57.3   | 4<br>4.1   |                       |        |                            | 140<br>0.0009  | 29.357<br>0.0<br>0.017    |       | Vel = 1.39                           |       |
| U2<br>to<br>U1       | -2.5<br>-2.5   |           | 0.0<br>57.3   | 4<br>4.1   |                       |        |                            | 140<br>0.0009  | 29.374<br>0.0<br>0.054    |       | Vel = 1.39                           |       |
| U1<br>to<br>6        | -2.5<br>-2.5   |           | 0.0<br>57.3   | 4<br>4.1   | 2E                    | 29.067 | 13.260<br>29.067<br>42.327 | 140<br>0.0009  | 29.428<br>0.0<br>0.038    |       | Vel = 1.39                           |       |
| 6<br>to<br>7         | -2.5<br>-2.5   |           | 0.0<br>57.3   | 4<br>4.1   |                       |        | 1.260<br>1.260             | 140<br>0.0016  | 29.466<br>0.0<br>0.002    |       | Vel = 1.39                           |       |
| 7<br>to<br>TEST      | -2.5<br>2.600  |           | 0.0<br>57.3   | 4<br>4.1   | T                     | 29.067 | 16.410<br>29.067<br>45.477 | 140<br>0.0009  | 29.468<br>-2.209<br>0.041 |       | Vel = 1.39                           |       |
| TEST                 |                |           | 5.00<br>62.30 |            |                       |        |                            |                | 27.300                    |       | Qa = 5.00<br>K Factor = 11.92        |       |
| 30<br>to<br>S15      | 7.67<br>8.5    | 4.90      | 13.08         | 1<br>1.101 | T                     | 9.563  | 0.830<br>9.562<br>10.392   | 150<br>0.0310  | 7.125<br>-0.359<br>0.322  |       | Vel = 4.41                           |       |
| S15                  |                |           | 0.0<br>13.08  |            |                       |        |                            |                | 7.088                     |       | K Factor = 4.91                      |       |
| 31<br>to<br>S14      | 7.67<br>8.5    | 4.90      | 15.33         | 1<br>1.101 | E                     | 3.825  | 0.830<br>3.825<br>4.655    | 150<br>0.0415  | 9.788<br>-0.359<br>0.193  |       | Vel = 5.17                           |       |
| S14<br>to<br>28      | 8.5<br>8.5     |           | 0.0<br>15.33  | 1<br>1.101 | T                     | 9.563  | 1.170<br>9.562<br>10.732   | 150<br>0.0416  | 9.622<br>0.0<br>0.446     |       | Vel = 5.17                           |       |
| 28                   |                |           | 0.0<br>15.33  |            |                       |        |                            |                | 10.068                    |       | K Factor = 4.83                      |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt | Nom<br>Act | Fitting<br>or<br>Equiv<br>Len | Pipe<br>Ftngs<br>Total | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf | *****  | Notes           | ***** |
|----------------------|----------------|-----------|----------|------------|-------------------------------|------------------------|----------------|----------------|--------|-----------------|-------|
| 32<br>to<br>S13      | 7.67<br>8.5    | 4.90      | 15.93    | 1          | E                             | 3.825                  | 0.830          | 150            | 10.568 |                 |       |
|                      |                |           |          |            |                               |                        | 3.825          | -0.359         |        |                 |       |
| S13<br>to<br>29      | 8.5<br>8.5     |           | 15.93    | 1.101      |                               |                        | 4.655          | 0.0447         | 0.208  | Vel = 5.37      |       |
|                      |                |           | 0.0      | 1          | T                             | 9.563                  | 1.170          | 150            | 10.417 |                 |       |
|                      |                |           |          |            |                               |                        | 9.562          | 0.0            |        |                 |       |
|                      |                |           | 15.93    | 1.101      |                               |                        | 10.732         | 0.0446         | 0.479  | Vel = 5.37      |       |
|                      |                |           | 0.0      |            |                               |                        |                |                |        |                 |       |
| 29                   |                |           | 15.93    |            |                               |                        |                |                | 10.896 | K Factor = 4.83 |       |

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