Summary

December 27, 2024

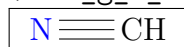# Contents

0.1 Loaded Graphs

0.1.1 g_{0}

$$N \equiv C - H$$

File: out/001_g_0_10300000

$$N \equiv CH$$

File: out/003_g_0_11310100

0.1.2 g_{1}
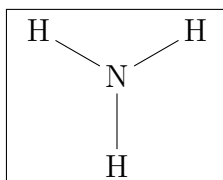
File: out/005_g_1_10300000

$$NH_3$$
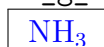
File: out/007_g_1_11310100

0.1.3 g_{2}
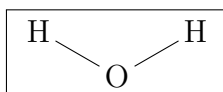
File: out/009_g_2_10300000

$$H_2O$$
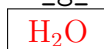
File: out/011_g_2_11310100

0.2 Product Graphs

0.2.1 p_{0,56}

File: out/013_g_1088_10300000
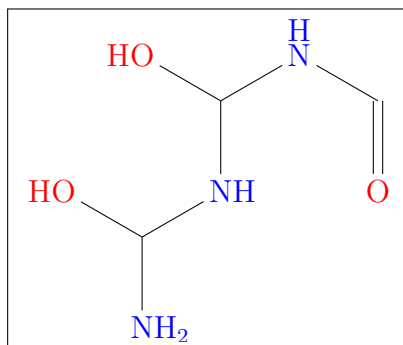
File: out/015_g_1088_11310100

0.3 Enumerated Flows

0.3.1 Solution 0

Overall Data

```
Objective value (non-integral): -0.0223921
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507152  -3.000000  0
g_{2}        3  0   -5.068043  -3.000000  0
p_{0,13}     0  0   -21.240635 -0.017965  3
p_{0,1}      0  0   -10.610080 1.000000   1
p_{0,56}     0  1   -31.869324 -3.000000  67
```

Filtered Graph
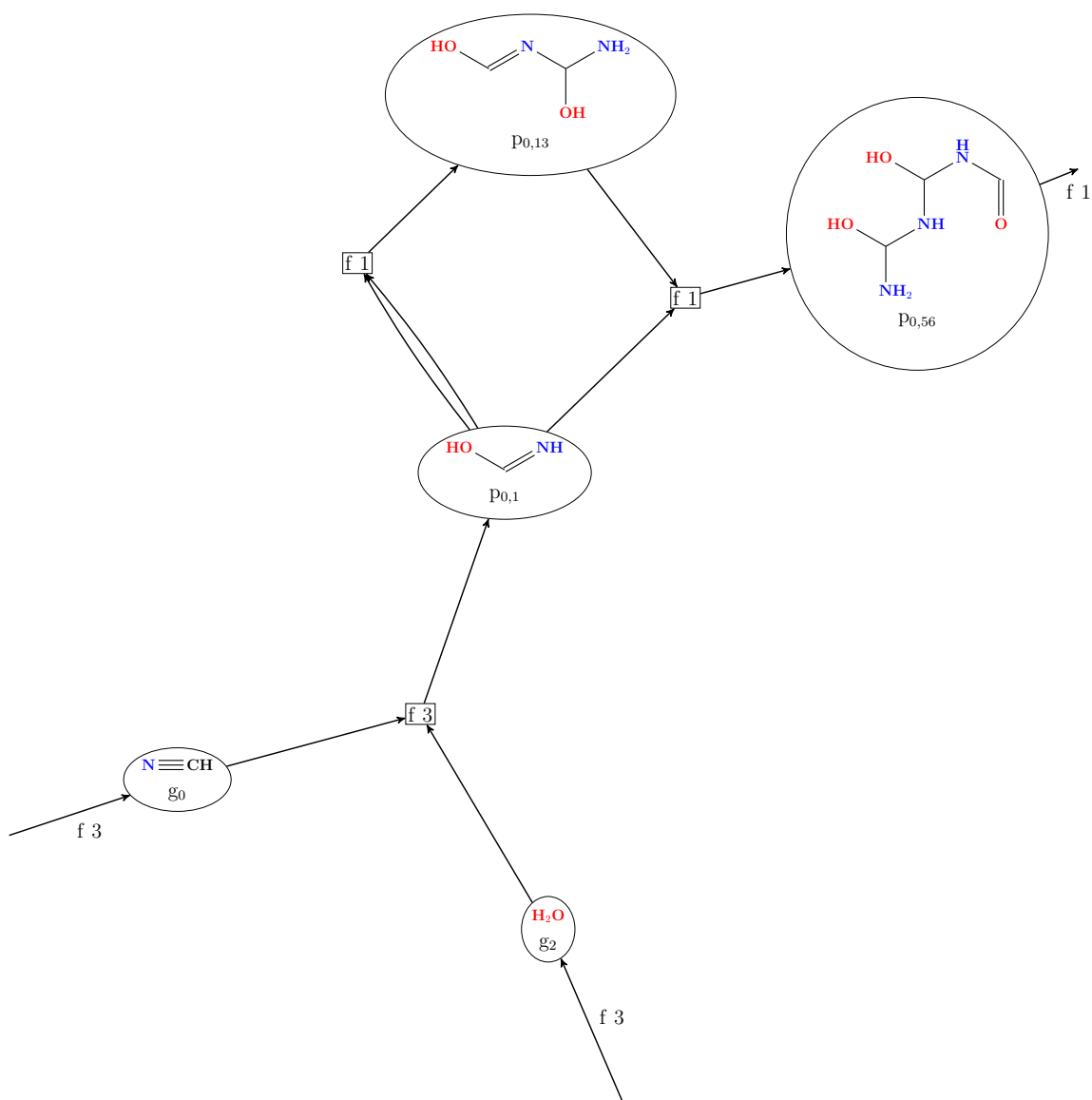
File: `out/027_dg_0_11100_f_0_0_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.279594	-0.017965	-55767.339342	3
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.13043	-74.13043
30	$p_{0,1}, p_{0,1},$	$p_{0,13},$	1	-58.790401	-58.790401
263	$p_{0,1}, p_{0,13},$	$p_{0,56},$	1	-58.790401	-58.790401
Sum					-58.79040111959954

$\Delta G = -33.99720862062955$

$\Delta E = -0.022392081200682784$

$|E| = 5$
$|U| = 3$

0.3.2 Solution 1

Overall Data

```
Objective value (non-integral): -0.0184295
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507141  -3.000000  0
g_{2}        3  0   -5.068033  1.000000   0
p_{0,13}     0  0   -21.240678 -3.000000  3
p_{0,1}      0  0   -10.610080 1.000000   1
p_{0,56}     0  1   -31.869324 -3.000000  5
p_{0,5}      0  0   -16.158965 1.000000   2
```

Filtered Graph
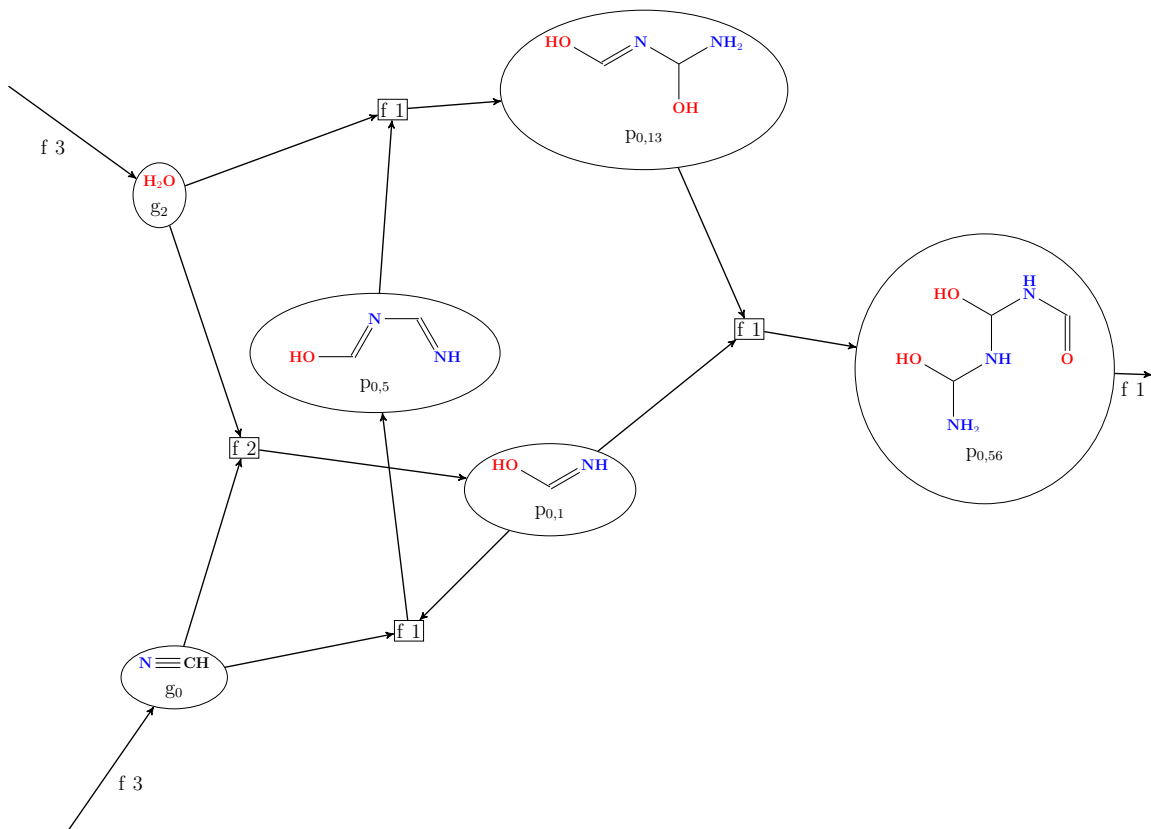
File: `out/038_dg_0_11100_f_0_1_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,5}$	0	0	-42425.357769	1.0	-42422.031984	2
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	3
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	5

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	2	-84.163316	-84.163316
14	$g_0, p_{0,1},$	$p_{0,5},$	1	-102.116753	-102.116753
123	$g_2, p_{0,5},$	$p_{0,13},$	1	-48.386704	-48.386704
263	$p_{0,1}, p_{0,13},$	$p_{0,56},$	1	-51.240661	-51.240661
Sum					-48.38670441401397

ΔG = -37.007074581030366

ΔE = -0.01842952239886703

|E| = 5

|U| = 4

0.3.3 Solution 2

Overall Data

```
Objective value (non-integral): -0.01515
Vertex/Graph In Out G          logK       t_order
g_{0}       3  0   -5.507152  -3.000000 0
g_{2}       3  0   -5.068033  1.000000  0
p_{0,17}    0  0   -21.248844 1.000000  3
p_{0,1}     0  0   -10.610080 1.000000  1
p_{0,56}    0  1   -31.869324 -3.000000 67
```

Filtered Graph
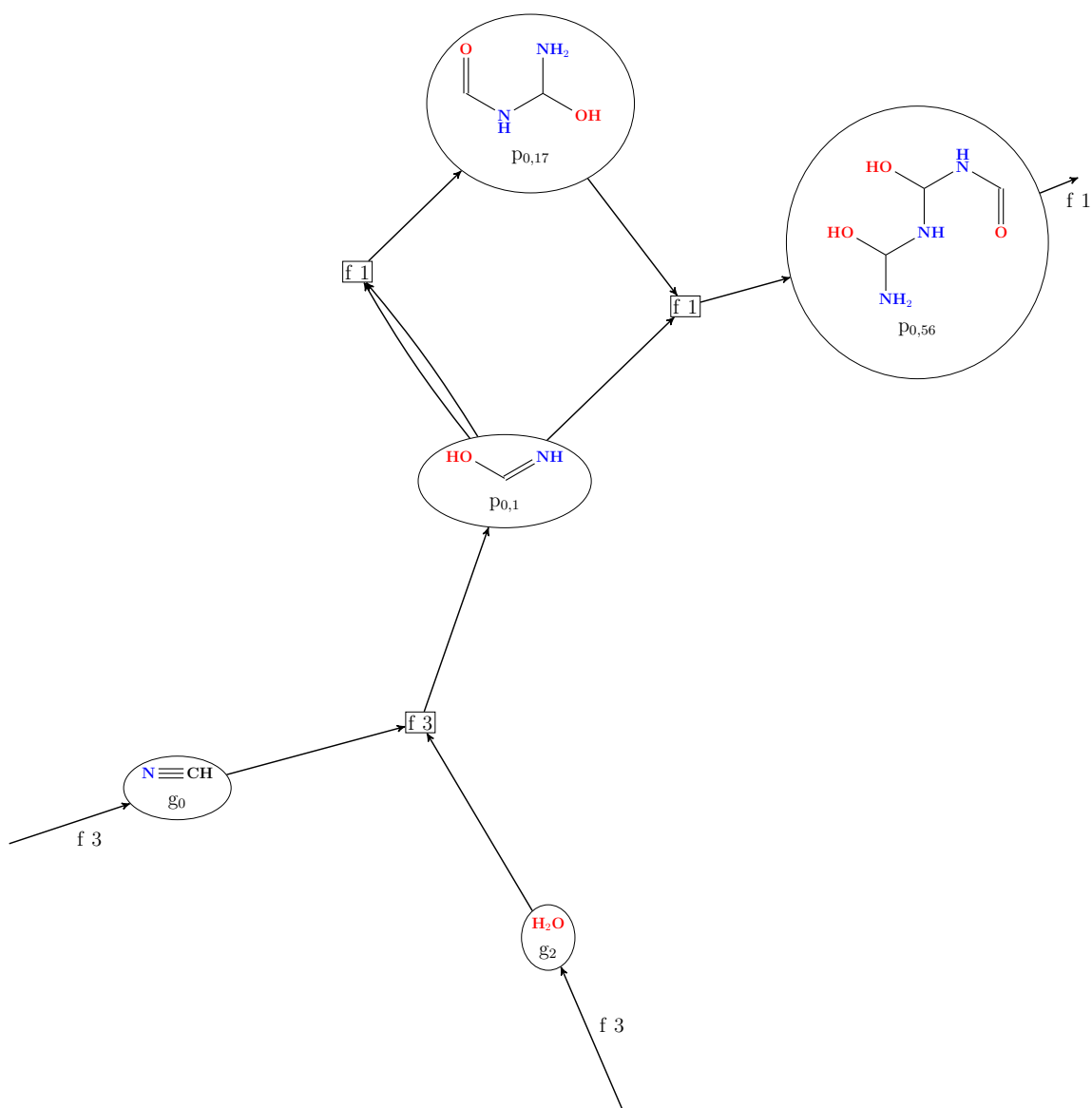
File: `out/049_dg_0_11100_f_0_2_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	3
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.134398	-84.134398
40	$p_{0,1}, p_{0,1},$	$p_{0,17},$	1	-77.804394	-77.804394
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-39.776408	-39.776408
Sum					-39.776407994993804

ΔG = -36.9983986174717

ΔE = -0.015150033691443136

|E| = 5
|U| = 3

## 0.3.4   Solution 3

Overall Data

```
Objective value (non-integral): -0.0148452
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507141  -3.000000 0
g_{2}        3  0   -5.068043  -3.000000 0
p_{0,15}     0  0   -10.625174 1.000000  2
p_{0,17}     0  0   -21.248887 0.723879  4
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 6
```

Filtered Graph

f 1

HO   N-H

HO   NH

O

NH₂

p₀,₅₆

O   NH₂

N-H   OH
H

p₀,₁₇

f 1

f 1

HO   NH

p₀,₁

H₂N   O

p₀,₁₅

f 1

f 3

N≡CH
g₀

H₂O
g₂

f 3

f 3

File: `out/060_dg_0_11100_f_0_3_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.944315	0.723879	-55786.53685	4
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	6

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.159348	-74.159348
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
183	$p_{0,1}, p_{0,15},$	$p_{0,17},$	1	-38.97609	-38.97609
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-38.97609	-38.97609
Sum					-38.97609006770198

$\Delta G = $ -34.00588432163825

$\Delta E = $ -0.014845208691562225

$|\text{E}| = 6$
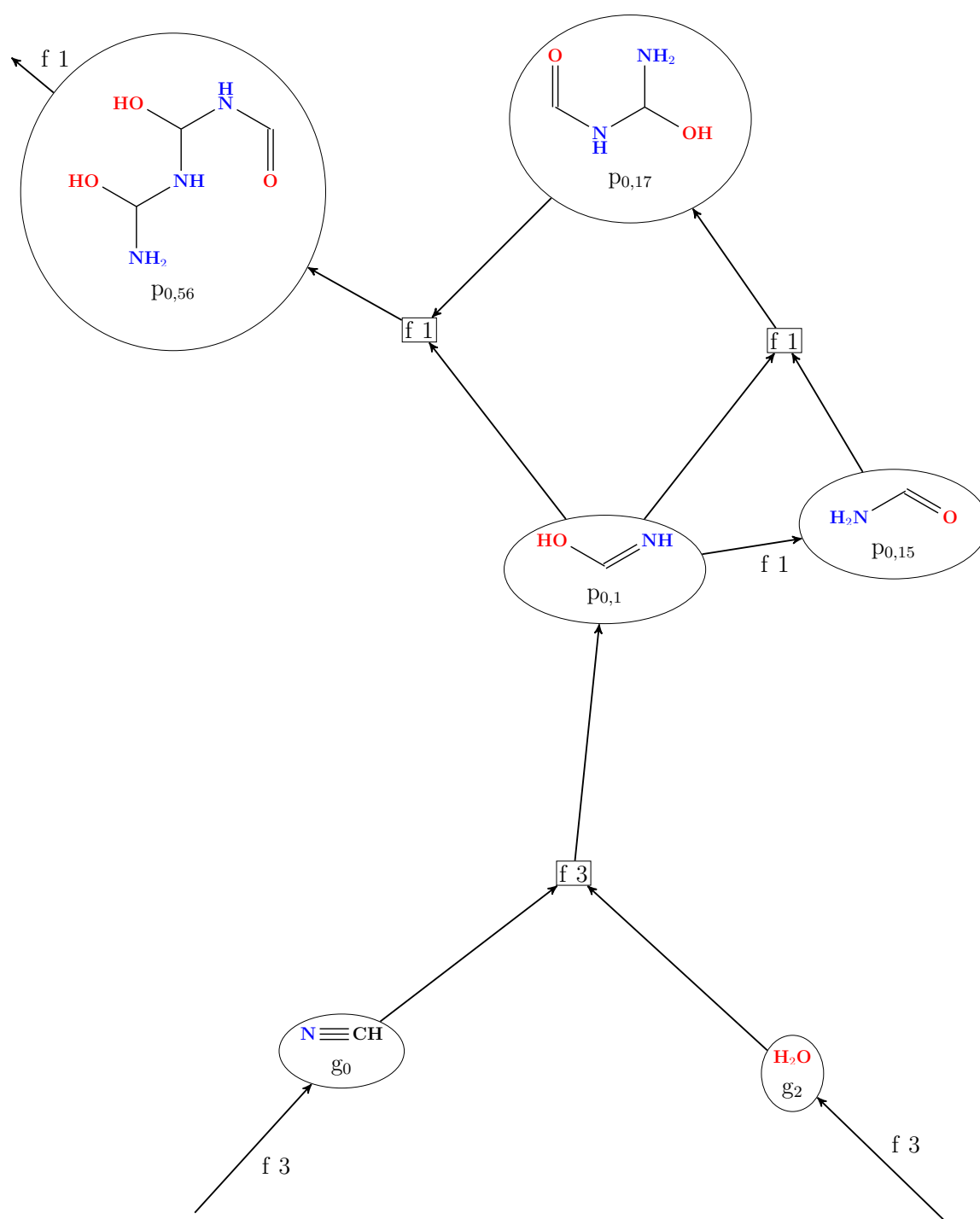
$|\text{U}| = 4$

0.3.5 Solution 4

Overall Data

```
Objective value (non-integral): -0.0116796
Vertex/Graph In Out G          logK       t_order
g_{0}          3  0   -5.507152  -3.000000 0
g_{2}          3  0   -5.068033  1.000000  0
p_{0,13}       0  0   -21.240635 1.000000  3
p_{0,17}       0  0   -21.248887 -2.608193 4
p_{0,1}        0  0   -10.610080 1.000000  1
p_{0,56}       0  1   -31.869324 -3.000000 67
p_{0,5}        0  0   -16.158965 -2.060145 2
```

Filtered Graph
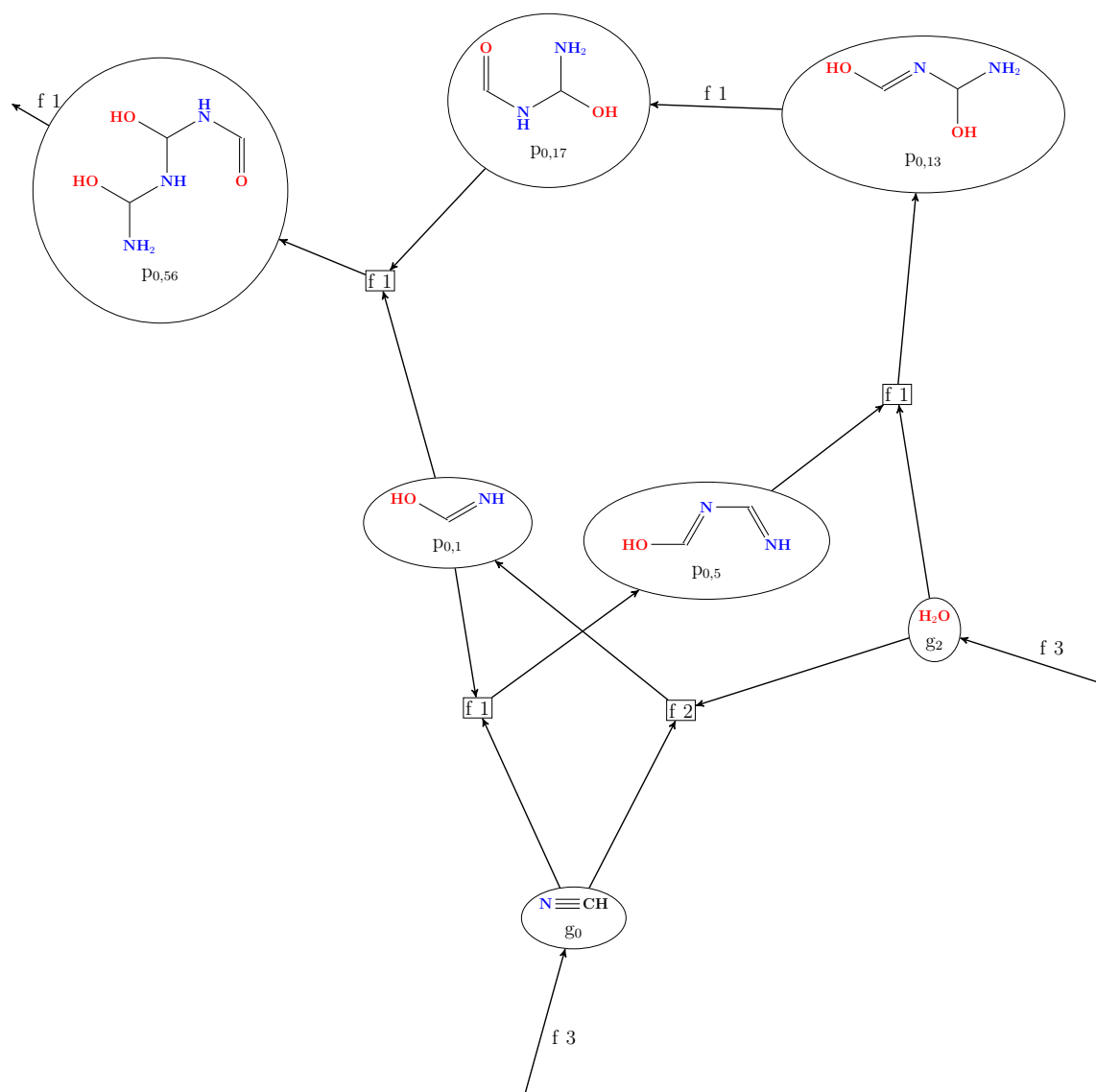
File: `out/069_dg_0_11100_f_0_4_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,5}$	0	0	-42425.357769	-2.060145	-42432.20937	2
$p_{0,13}$	0	0	-55767.279594	1.0	-55763.953809	3
$p_{0,17}$	0	0	-55788.944315	-2.608193	-55797.618603	4
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	2	-84.134398	-84.134398
14	$g_0, p_{0,1},$	$p_{0,5},$	1	-109.720874	-109.720874
123	$g_2, p_{0,5},$	$p_{0,13},$	1	-30.664775	-30.664775
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-30.664775	-30.664775
250	$p_{0,13},$	$p_{0,17},$	1	-30.664775	-30.664775
Sum					-30.664775415823865

ΔG = -36.99839888002166
ΔE = -0.011679596125138776
|E| = 6
|U| = 5

0.3.6 Solution 5

Overall Data

```
Objective value (non-integral): -0.0116796
Vertex/Graph In Out G          logK       t_order
g_{0}          3   0   -5.507141  -3.000000 0
g_{2}          3   0   -5.068043  -3.000000 0
p_{0,13}       0   0   -21.240635 1.000000  3
p_{0,17}       0   0   -21.248887 -2.608193 4
p_{0,1}        0   0   -10.610080 1.000000  1
p_{0,56}       0   1   -31.869324 -3.000000 67
```

Filtered Graph
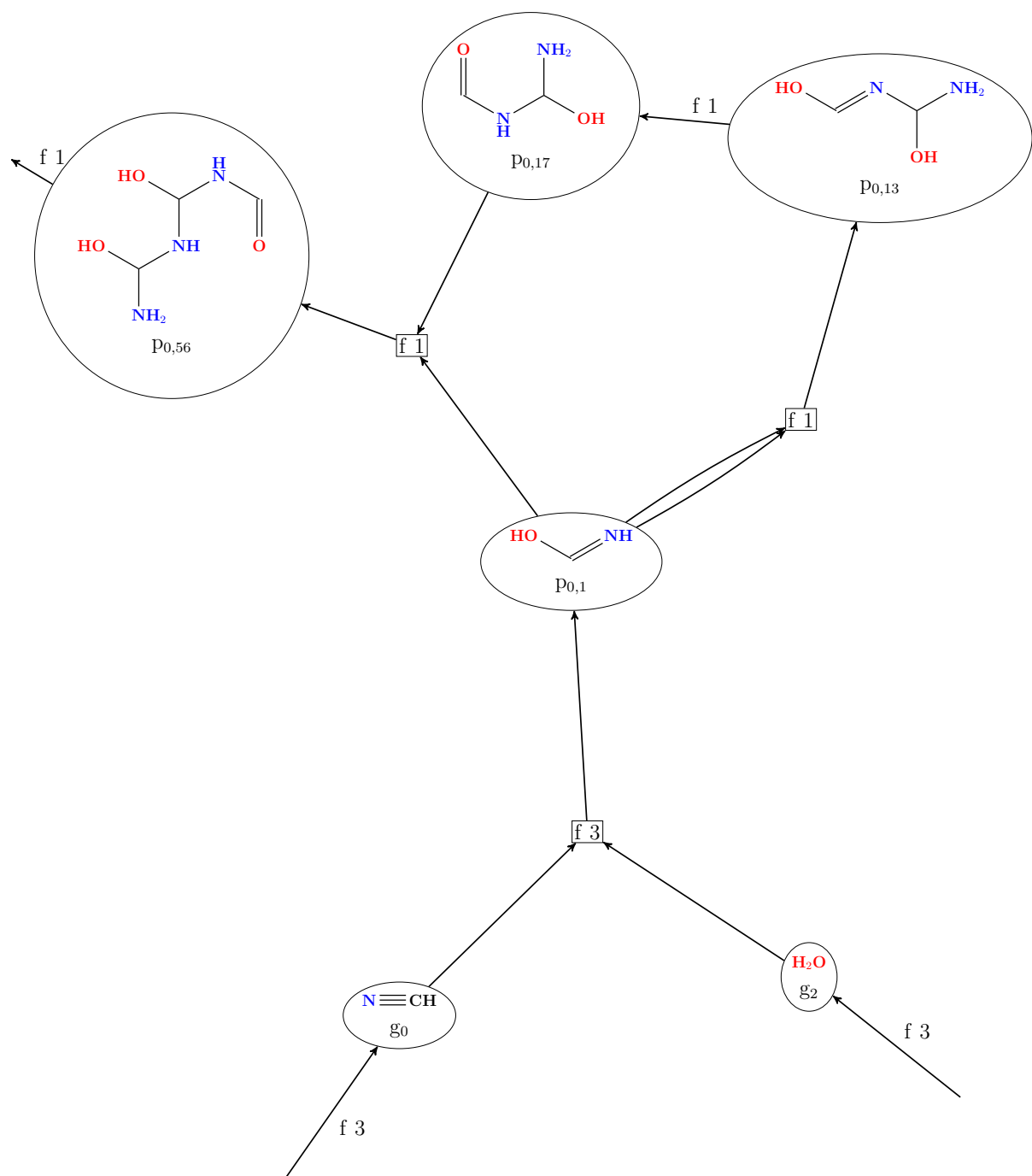
File: `out/078_dg_0_11100_f_0_5_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.279594	1.0	-55763.953809	3
$p_{0,17}$	0	0	-55788.944315	-2.608193	-55797.618603	4
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.159348	-74.159348
30	$p_{0,1}, p_{0,1},$	$p_{0,13},$	1	-56.251251	-56.251251
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-30.664775	-30.664775
250	$p_{0,13},$	$p_{0,17},$	1	-30.664775	-30.664775
Sum					-30.664775415823865

ΔG = -34.005884584188216

ΔE = -0.011679596125138776

$|E| = 6$

$|U| = 4$

0.3.7 Solution 6

Overall Data

```
Objective value (non-integral): -0.0101739
Vertex/Graph In Out G          logK       t_order
g_{0}       3  0   -5.507141  -3.000000 0
g_{2}       3  0   -5.068033  1.000000  0
p_{0,13}    0  0   -21.240678 -3.000000 4
p_{0,15}    0  0   -10.625174 1.000000  2
p_{0,1}     0  0   -10.610080 1.000000  1
p_{0,56}    0  1   -31.869324 -3.000000 67
```

Filtered Graph
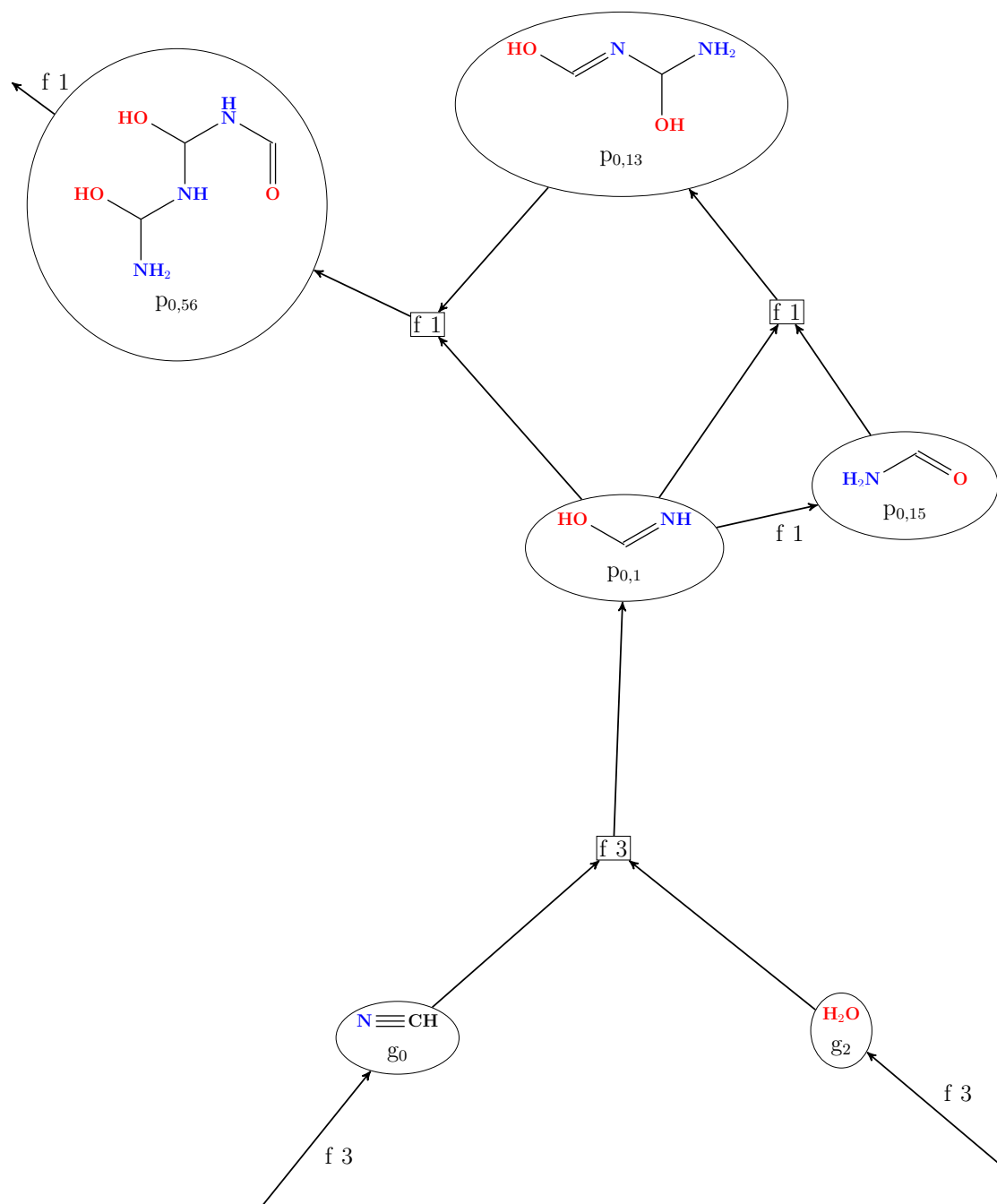
File: out/087_dg_0_11100_f_0_6_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	4
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.163316	-84.163316
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-26.711519	-26.711519
263	$p_{0,1}, p_{0,13},$	$p_{0,56},$	1	-51.240661	-51.240661
Sum					-26.711519116262124

ΔG = -37.00707484358033
ΔE = -0.010173880321519503
|E| = 6
|U| = 4

0.3.8   Solution 7

Overall Data

```
Objective value (non-integral): -0.00919153
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507141  -3.000000  0
g_{2}        3  0   -5.068033  1.000000   0
p_{0,13}     0  0   -21.240678 -1.965992  4
p_{0,15}     0  0   -10.625174 1.000000   2
p_{0,17}     0  0   -21.248887 -3.000000  5
p_{0,1}      0  0   -10.610080 1.000000   1
p_{0,56}     0  1   -31.869324 -3.000000  7
```

Filtered Graph
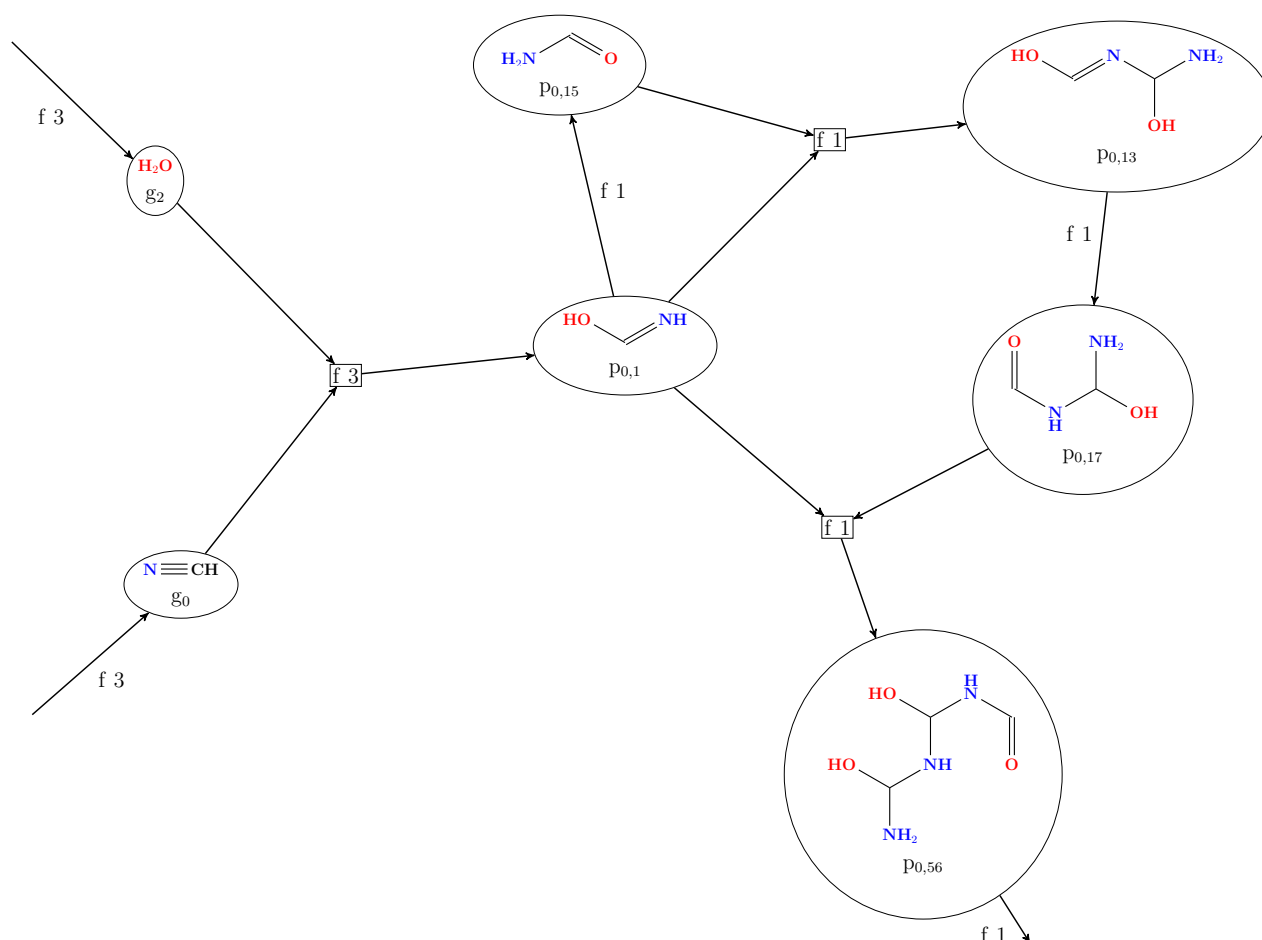
File: `out/096_dg_0_11100_f_0_7_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-1.965992	-55773.929595	4
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.944315	-3.0	-55798.92167	5
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	7

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.163316	-84.163316
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-24.132353	-24.132353
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-29.687475	-29.687475
250	$p_{0,13},$	$p_{0,17},$	1	-24.132353	-24.132353
Sum					-24.132352529622693

ΔG = -37.007074581030366

ΔE = -0.009191527649343835

|E| = 7
|U| = 5

## 0.3.9 Solution 8

Overall Data

```
Objective value (non-integral): -0.00826545
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507141  1.000000   0
g_{2}        3  0   -5.068033  1.000000   0
p_{0,13}     0  0   -21.240635 1.000000   3
p_{0,15}     0  0   -10.625174 1.000000   2
p_{0,1}      0  0   -10.610080 1.000000   1
p_{0,56}     0  1   -31.869324 -3.000000  67
p_{0,5}      0  0   -16.158965 1.000000   2
```

Filtered Graph
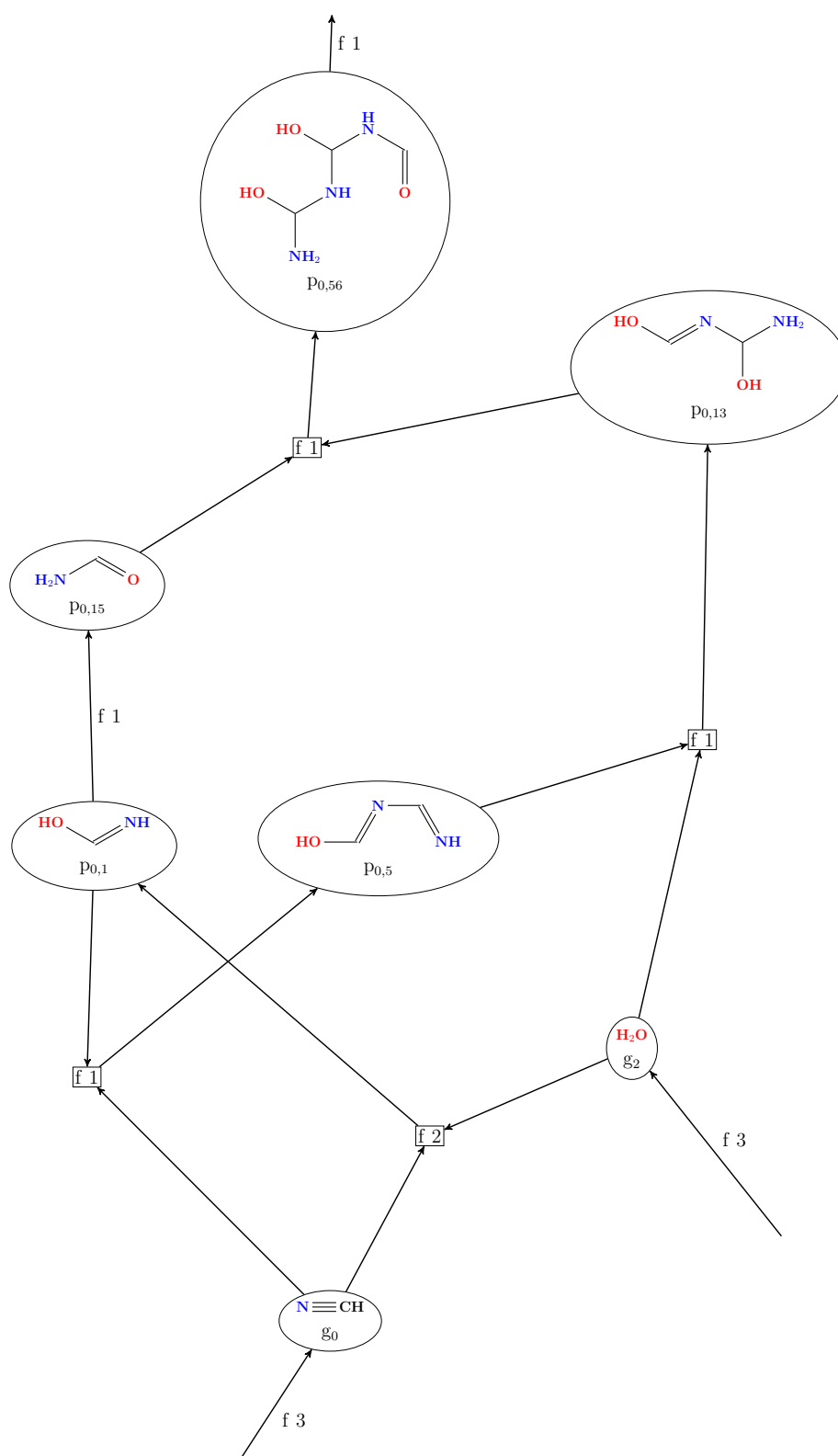
File: `out/105_dg_0_11100_f_0_8_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	1.0	-14455.670875	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,5}$	0	0	-42425.357769	1.0	-42422.031984	2
$p_{0,13}$	0	0	-55767.279594	1.0	-55763.953809	3
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	2	-94.140671	-94.140671
14	$g_0, p_{0,1},$	$p_{0,5},$	1	-112.094108	-112.094108
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
123	$g_2, p_{0,5},$	$p_{0,13},$	1	-38.297815	-38.297815
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-21.700929	-21.700929
Sum					-21.700928727852613

$\Delta G = $ -40.00028069601881

$\Delta E = $ -0.00826544723203643

$|E| = 6$

$|U| = 5$

0.3.10 Solution 9

Overall Data

```
Objective value (non-integral): -0.00826545
Vertex/Graph In Out G          logK        t_order
g_{0}        3  0   -5.507141  -3.000000 0
g_{2}        3  0   -5.068043  -3.000000 0
p_{0,13}     0  0   -21.240635 1.000000  3
p_{0,15}     0  0   -10.625174 1.000000  2
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 67
```

f 1

HO

H
N

HO

NH

O

NH₂

p_{0,56}

HO

N

NH₂

OH

p_{0,13}

f 1

H₂N

O

p_{0,15}

f 1

HO

NH

p_{0,1}

f 1

f 3

H₂O

g₂

f 3

N≡CH

g₀

f 3

File: out/114_dg_0_11100_f_0_9_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.279594	1.0	-55763.953809	3
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.159348	-74.159348
30	$p_{0,1}, p_{0,1},$	$p_{0,13},$	1	-56.251251	-56.251251
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-21.700929	-21.700929
Sum					-21.700928727852613

ΔG = -34.005884584188216
ΔE = -0.00826544723203643
|E| = 6
|U| = 4

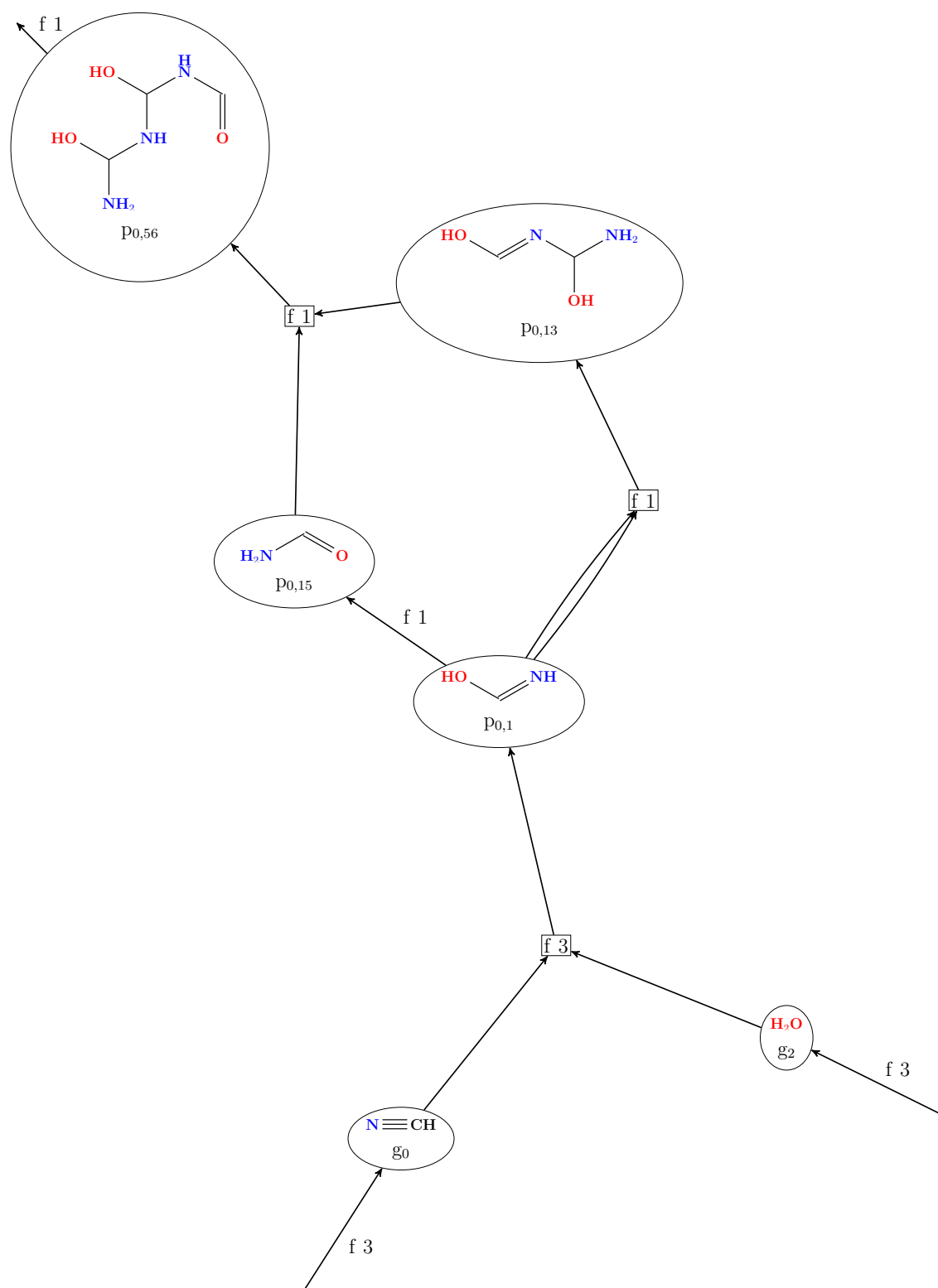## 0.3.11   Solution 10

Overall Data

```
Objective value (non-integral): -0.00729834
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507141  -3.000000 0
g_{2}        3  0   -5.068043  -3.000000 0
p_{0,13}     0  0   -21.240635 -0.017965 4
p_{0,15}     0  0   -10.625174 1.000000  2
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 67
```

Filtered Graph
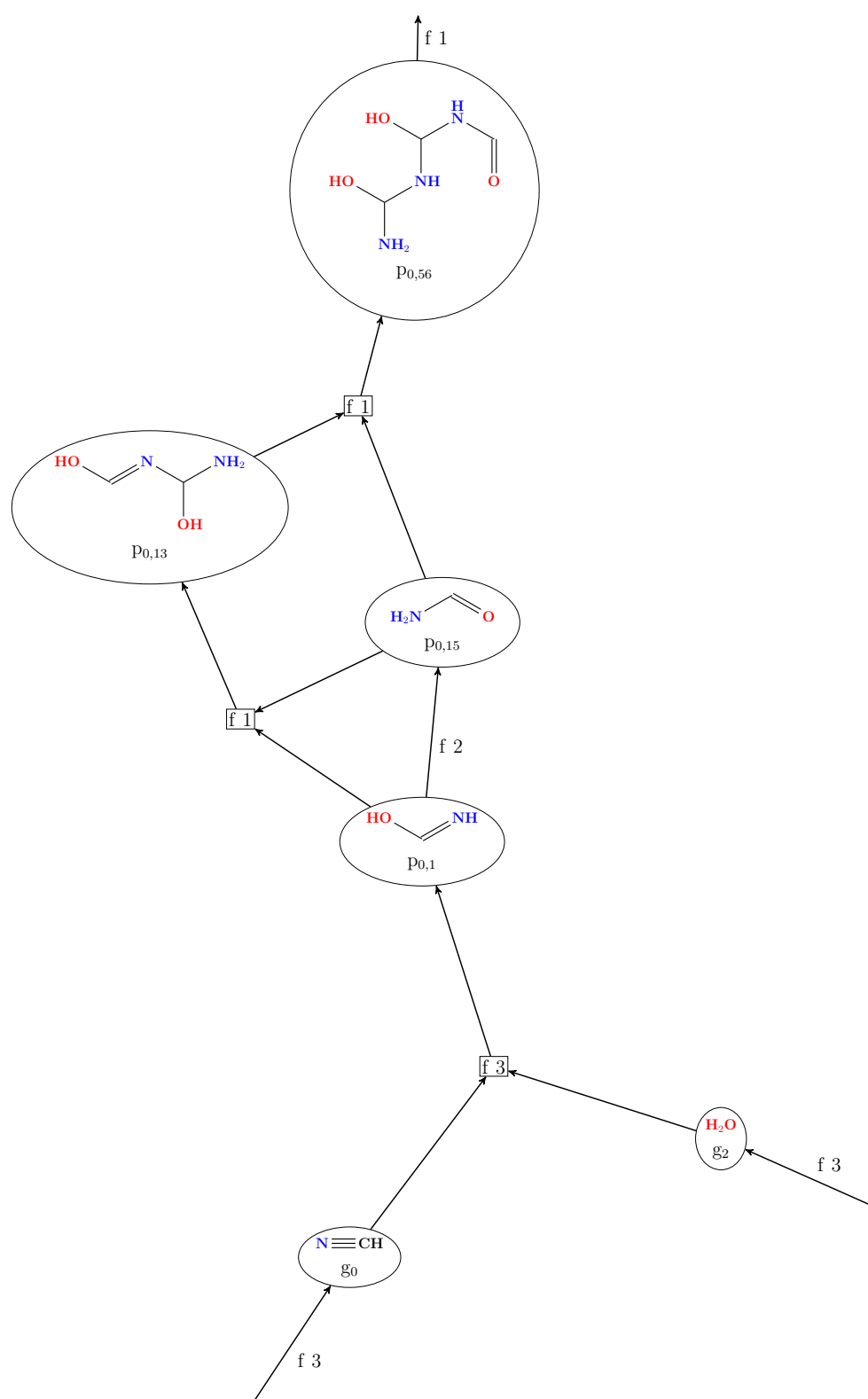
File: `out/123_dg_0_11100_f_0_10_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.279594	-0.017965	-55767.339342	4
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.159348	-74.159348
36	$p_{0,1},$	$p_{0,15},$	2	-39.628622	-39.628622
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-19.161779	-19.161779
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-19.161779	-19.161779
Sum					-19.161779015805372

ΔG = -34.005884584188216
ΔE = -0.007298336182442024
|E| = 7
|U| = 4

0.3.12 Solution 11

Overall Data

```
Objective value (non-integral): -0.00505001
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507152  -3.000000 0
g_{2}        3  0   -5.068033  1.000000  0
p_{0,13}     0  0   -21.240678 0.026750  6
p_{0,15}     0  0   -10.625195 -1.344182 4
p_{0,17}     0  0   -21.248844 1.000000  3
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 67
```

Filtered Graph
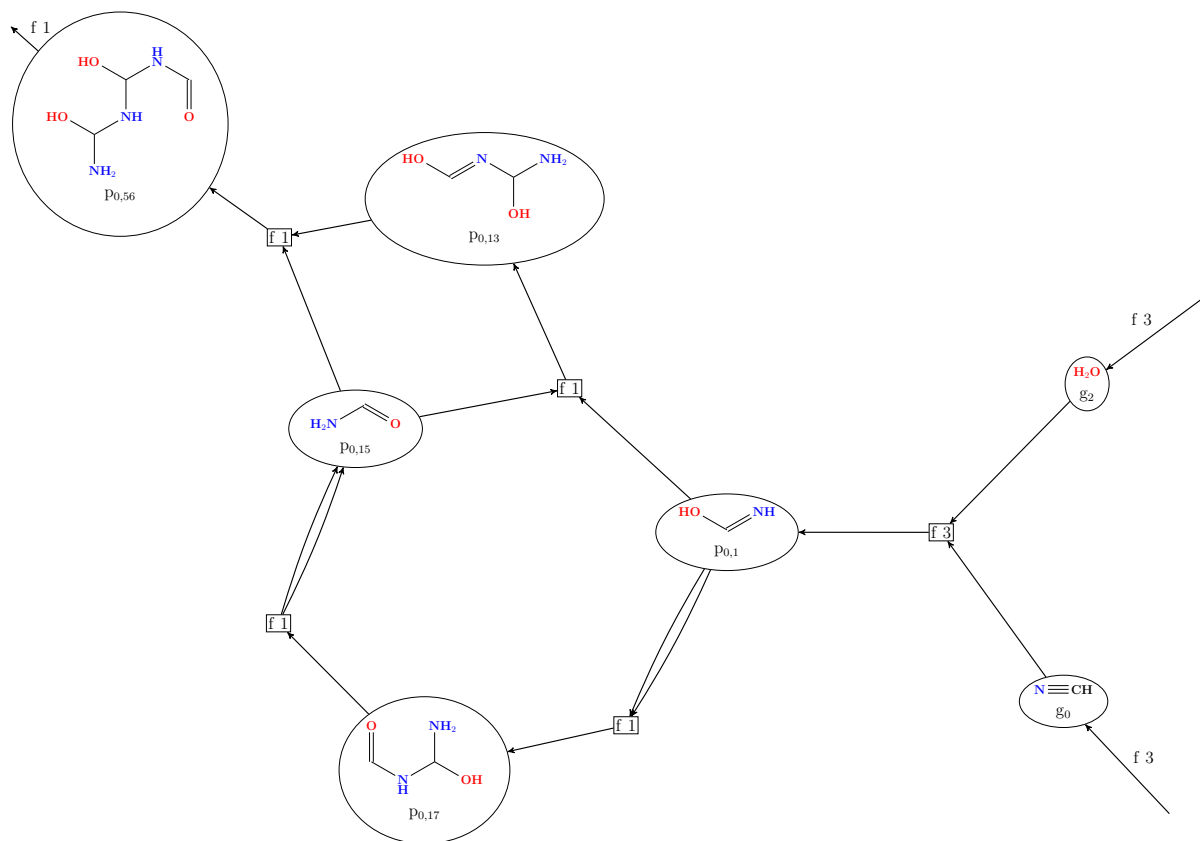
File: `out/132_dg_0_11100_f_0_11_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	0.02675	-55767.302164	6
$p_{0,15}$	0	0	-27896.445756	-1.344182	-27900.916215	4
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	3
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.134398	-84.134398
40	$p_{0,1}, p_{0,1},$	$p_{0,17},$	1	-77.804394	-77.804394
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-13.258803	-13.258803
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-13.258803	-13.258803
237	$p_{0,17},$	$p_{0,15}, p_{0,15},$	1	-13.258803	-13.258803
Sum					-13.258802664998566

ΔG = -36.9983986174717

ΔE = -0.005050011230481285

|E| = 7

|U| = 5

0.3.13 Solution 12

Overall Data

```
Objective value (non-integral): -0.00328931
Vertex/Graph In Out G          logK       t_order
g_{0}       3  0   -5.507152  -3.000000  0
g_{2}       3  0   -5.068033  1.000000   0
p_{0,15}    0  0   -10.625174 1.000000   2
p_{0,17}    0  0   -21.248887 -3.000000  65
p_{0,1}     0  0   -10.610080 1.000000   1
p_{0,56}    0  1   -31.869324 -3.000000  67
```

Filtered Graph

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.944315	-3.0	-55798.92167	65
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.134398	-84.134398
36	$p_{0,1},$	$p_{0,15},$	2	-39.628622	-39.628622
180	$p_{0,15}, p_{0,15},$	$p_{0,17},$	1	-8.636083	-8.636083
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-29.687475	-29.687475
Sum					-8.636082955448375

ΔG = -36.99839888002166

ΔE = -0.003289310280445826

|E| = 7

|U| = 4

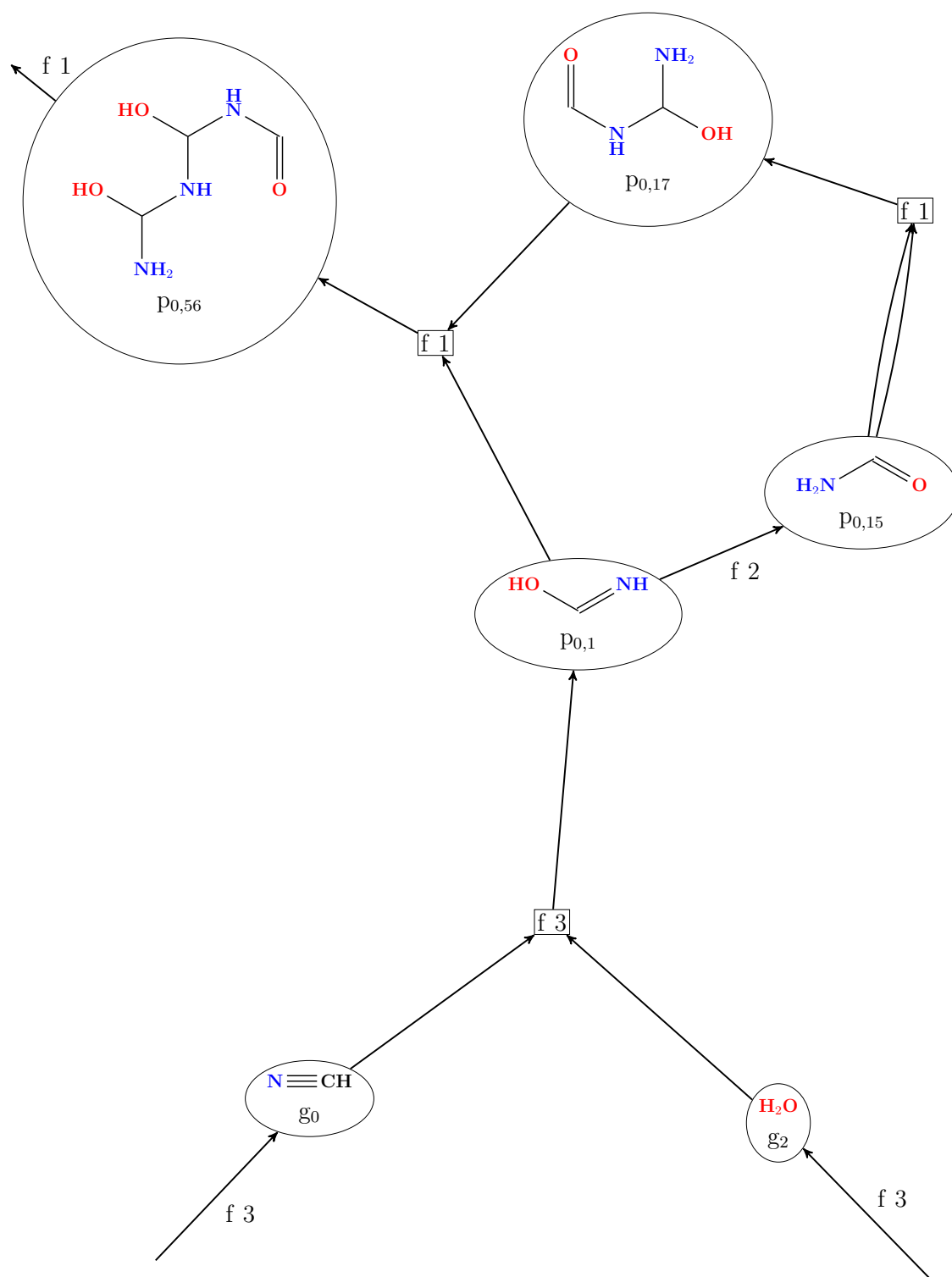### 0.3.14   Solution 13

Overall Data

```
Objective value (non-integral): -5.62887e-05
Vertex/Graph In Out G          logK      t_order
g_{0}        3  0   -5.507152  -3.000000 0
g_{2}        3  0   -5.068033  1.000000  0
p_{0,13}     0  0   -21.240678 -3.000000 4
p_{0,15}     0  0   -10.625174 1.000000  2
p_{0,17}     0  0   -21.248844 1.000000  5
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 67
```

Filtered Graph
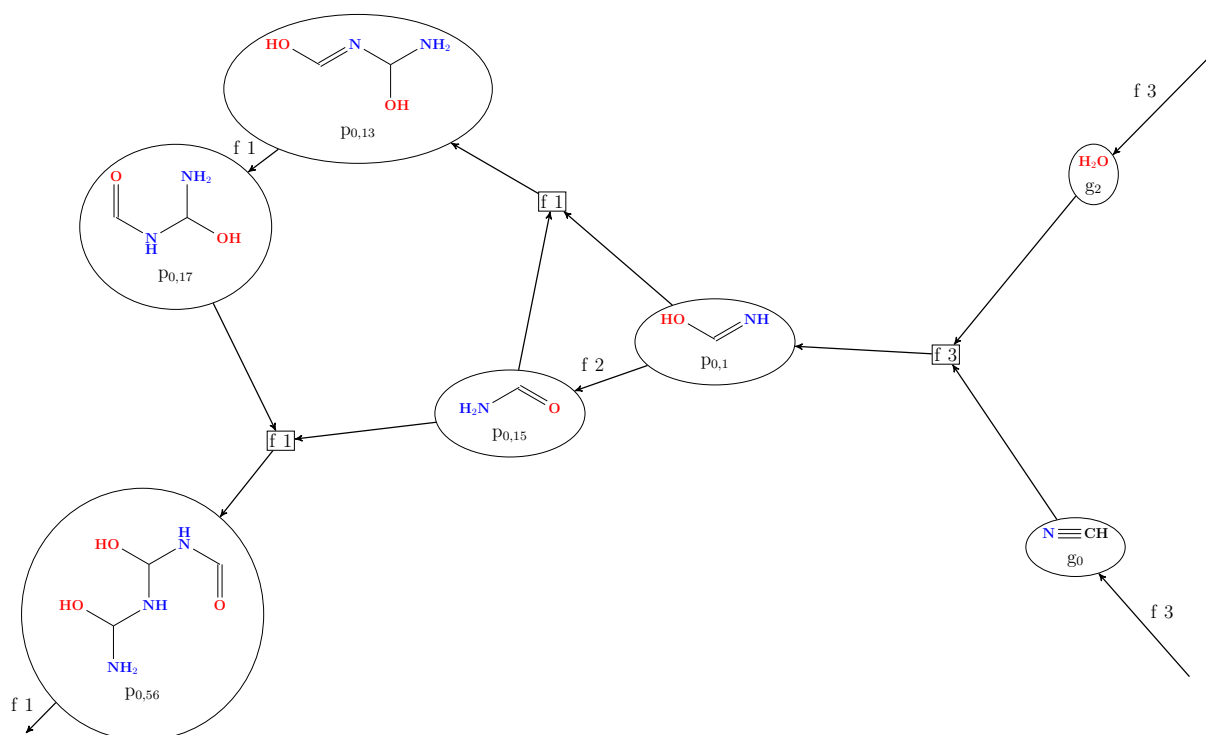
File: `out/150_dg_0_11100_f_0_13_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	4
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	5
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.134398	-84.134398
36	$p_{0,1},$	$p_{0,15},$	2	-39.628622	-39.628622
181	$p_{0,15}, p_{0,17},$	$p_{0,56},$	1	-0.147786	-0.147786
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-26.711519	-26.711519
250	$p_{0,13},$	$p_{0,17},$	1	-11.464253	-11.464253
Sum					-0.14778589119869168

ΔG = -36.9983986174717

ΔE = -5.628867320201262e-05

|E| = 8

|U| = 5

0.3.15 Solution 14

Overall Data

```
Objective value (non-integral): -5.62887e-05
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507141  -3.000000  0
g_{2}        3  0   -5.068033  1.000000   0
p_{0,15}     0  0   -10.625174 1.000000   2
p_{0,17}     0  0   -21.248844 1.000000   3
p_{0,1}      0  0   -10.610080 1.000000   1
p_{0,56}     0  1   -31.869324 -3.000000  67
```

f 1

HO

H
N

HO

NH

O

NH$_2$

p$_{0,56}$

f 1

O

NH$_2$

N
H

OH

p$_{0,17}$

f 1

H$_2$N

O

p$_{0,15}$

f 1

HO

NH

p$_{0,1}$

f 1

f 3

H$_2$O

g$_2$

f 3

N≡CH

g$_0$

f 3

File: `out/159_dg_0_11100_f_0_14_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	3
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.163316	-84.163316
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
40	$p_{0,1}, p_{0,1},$	$p_{0,17},$	1	-77.804394	-77.804394
181	$p_{0,15}, p_{0,17},$	$p_{0,56},$	1	-0.147786	-0.147786
Sum					-0.14778589119869168

ΔG = -37.007074581030366
ΔE = -5.628867320201262e-05
|E| = 6
|U| = 4

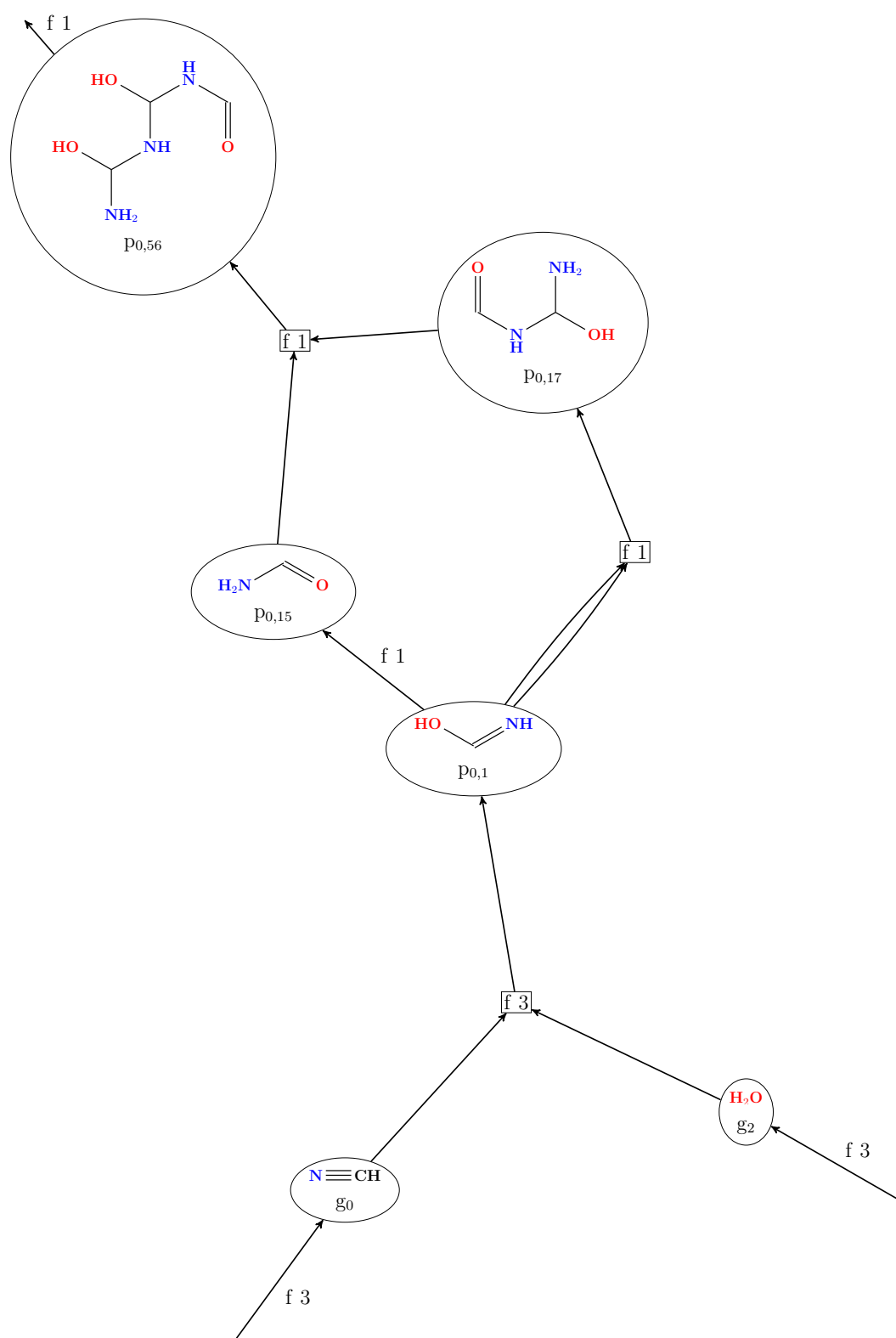## 0.3.16 Solution 15

Overall Data

```
Objective value (non-integral): -5.62887e-05
Vertex/Graph In Out G          logK      t_order
g_{0}       3  0   -5.507141  -3.000000 0
g_{2}       3  0   -5.068033  1.000000  0
p_{0,15}    0  0   -10.625174 1.000000  2
p_{0,17}    0  0   -21.248844 1.000000  4
p_{0,1}     0  0   -10.610080 1.000000  1
p_{0,56}    0  1   -31.869324 -3.000000 67
```

Filtered Graph

HO

H
N

HO

NH

O

NH$_2$

p$_{0,56}$

O

NH$_2$

N
H

OH

p$_{0,17}$

f 1

f 1

H$_2$N

O

p$_{0,15}$

f 2

HO

NH

p$_{0,1}$

f 3

N≡CH

g$_0$

H$_2$O

g$_2$

f 3

f 3

f 3

File: `out/168_dg_0_11100_f_0_15_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	4
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.163316	-84.163316
36	$p_{0,1},$	$p_{0,15},$	2	-39.628622	-39.628622
181	$p_{0,15}, p_{0,17},$	$p_{0,56},$	1	-0.147786	-0.147786
183	$p_{0,1}, p_{0,15},$	$p_{0,17},$	1	-38.175772	-38.175772
Sum					-0.14778589119869168

ΔG = -37.007074581030366
ΔE = -5.628867320201262e-05
|E| = 7
|U| = 4

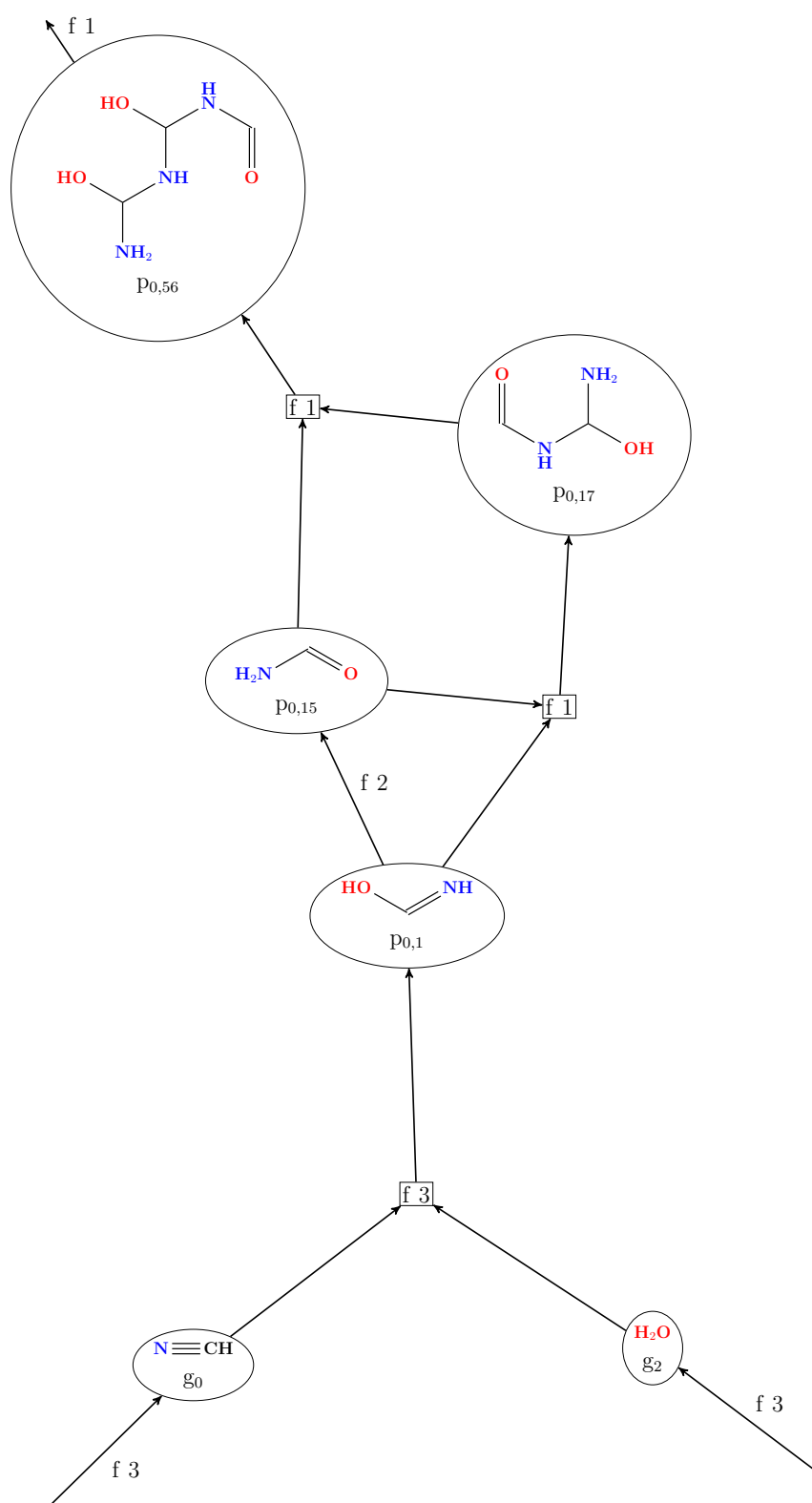## 0.3.17 Solution 16

Overall Data

```
Objective value (non-integral): -5.62887e-05
Vertex/Graph In Out G          logK      t_order
g_{0}          3   0   -5.507141  -3.000000 0
g_{2}          3   0   -5.068043  -3.000000 0
p_{0,13}       0   0   -21.240635 1.000000  3
p_{0,15}       0   0   -10.625174 1.000000  2
p_{0,17}       0   0   -21.248844 1.000000  4
p_{0,1}        0   0   -10.610101 -3.000000 1
p_{0,56}       0   1   -31.869324 -3.000000 67
```

Filtered Graph
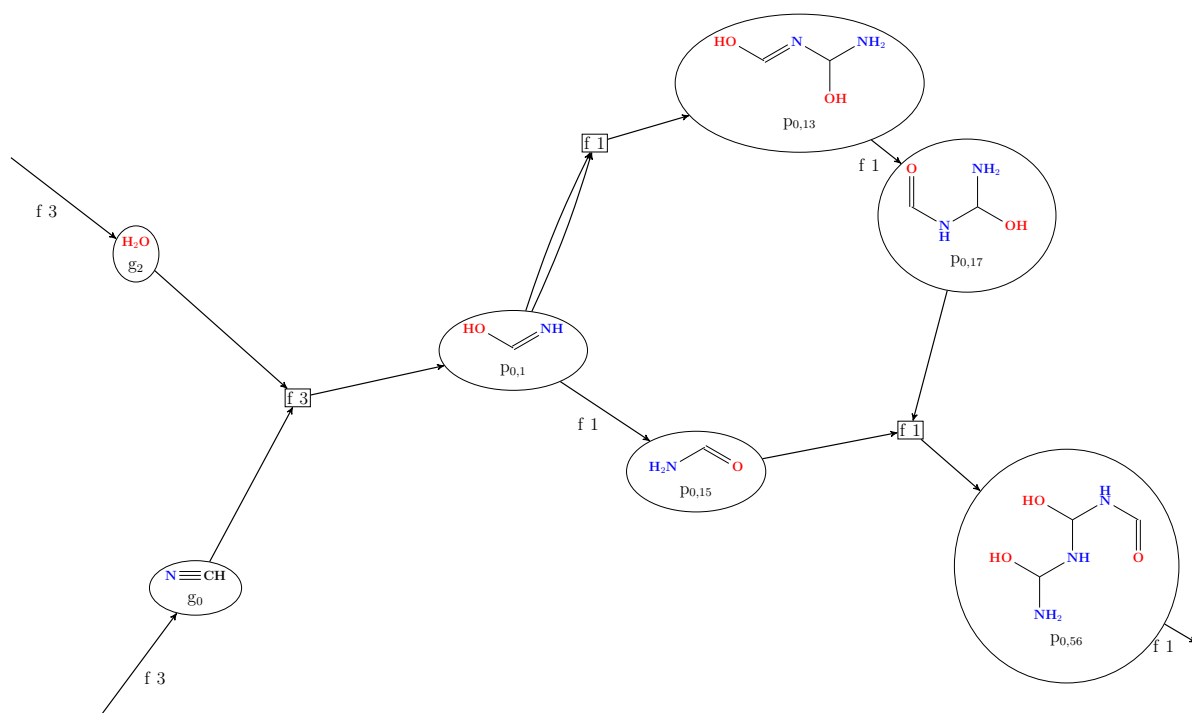
File: `out/177_dg_0_11100_f_0_16_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.817054	-3.0	-27866.79441	1
$p_{0,13}$	0	0	-55767.279594	1.0	-55763.953809	3
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	4
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.192417	-84.192417
30	$p_{0,1}, p_{0,1},$	$p_{0,13},$	1	-36.185114	-36.185114
36	$p_{0,1},$	$p_{0,15},$	1	-29.595553	-29.595553
181	$p_{0,15}, p_{0,17},$	$p_{0,56},$	1	-0.147786	-0.147786
250	$p_{0,13},$	$p_{0,17},$	1	-21.553143	-21.553143
Sum					-0.14778589119869168

ΔG = -34.00588405908829

ΔE = -5.628867320201262e-05

|E| = 7

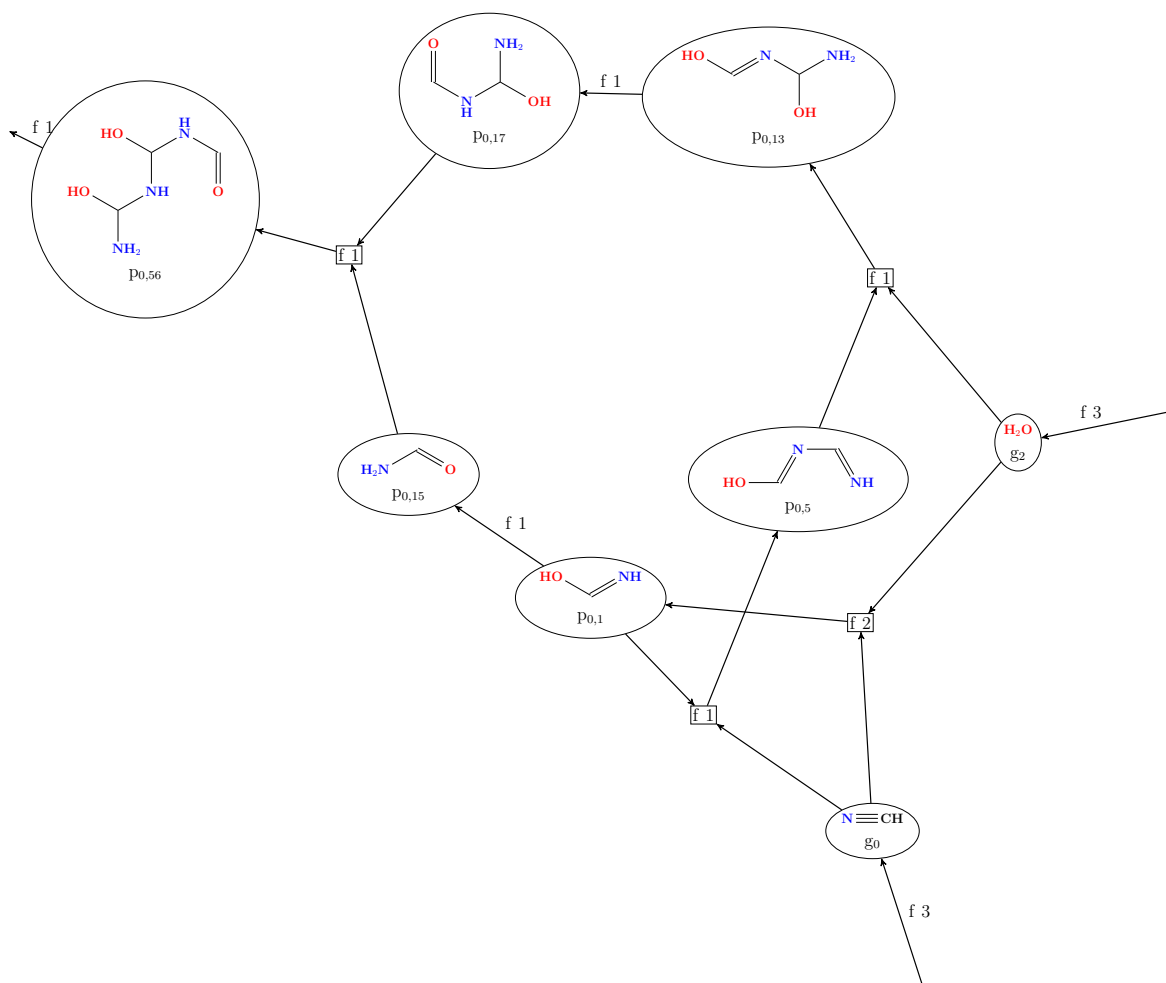|U| = 5

0.3.18   Solution 17

Overall Data

Objective value (non-integral): -5.62887e-05

```
Vertex/Graph In Out G          logK       t_order
g_{0}        3   0   -5.507141  -3.000000  0
g_{2}        3   0   -5.068043  -3.000000  0
p_{0,13}     0   0   -21.240678 -3.000000  3
p_{0,15}     0   0   -10.625174 1.000000   2
p_{0,17}     0   0   -21.248844 1.000000   4
p_{0,1}      0   0   -10.610080 1.000000   1
p_{0,56}     0   1   -31.869324 -3.000000  7
p_{0,5}      0   0   -16.158965 1.000000   2
```

Filtered Graph

File: `out/186_dg_0_11100_f_0_17_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,5}$	0	0	-42425.357769	1.0	-42422.031984	2
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	3
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	4
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	7

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	2	-74.159348	-74.159348
14	$g_0, p_{0,1},$	$p_{0,5},$	1	-102.116753	-102.116753
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
123	$g_2, p_{0,5},$	$p_{0,13},$	1	-38.382737	-38.382737
181	$p_{0,15}, p_{0,17},$	$p_{0,56},$	1	-0.147786	-0.147786
250	$p_{0,13},$	$p_{0,17},$	1	-11.464253	-11.464253
Sum					-0.14778589119869168

ΔG = -34.00588405908829
ΔE = -5.628867320201262e-05
$|\text{E}| = 7$
$|\text{U}| = 6$
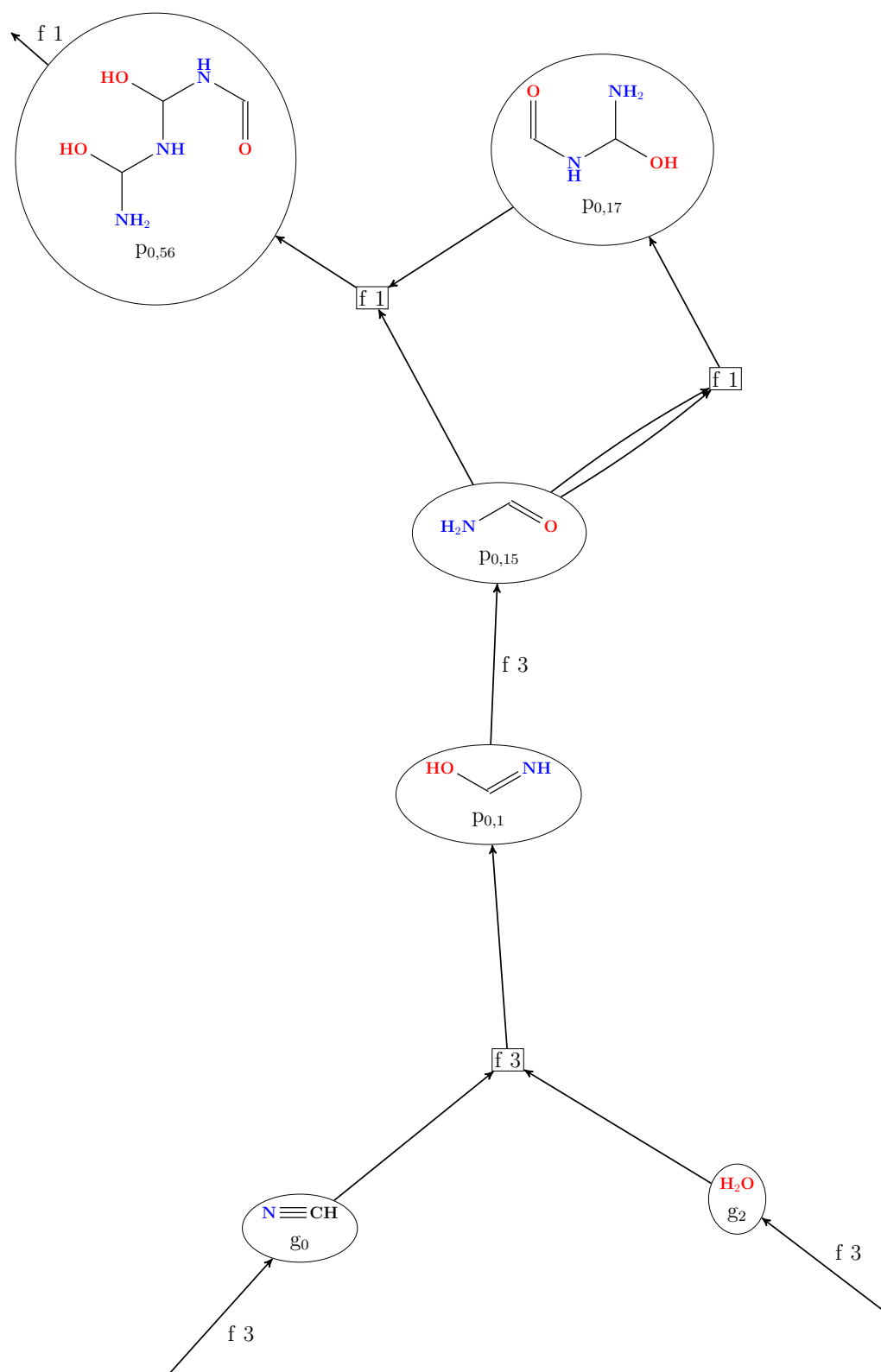
0.3.19   Solution 18

Overall Data

```
Objective value (non-integral): 0.000248536
Vertex/Graph In Out G          logK      t_order
g_{0}       3  0   -5.507152  -3.000000 0
g_{2}       3  0   -5.068033  1.000000  0
p_{0,15}    0  0   -10.625174 1.000000  2
p_{0,17}    0  0   -21.248887 0.723879  5
p_{0,1}     0  0   -10.610080 1.000000  1
p_{0,56}    0  1   -31.869324 -3.000000 67
```

Filtered Graph

File: `out/195_dg_0_11100_f_0_18_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.944315	0.723879	-55786.53685	5
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.134398	-84.134398
36	$p_{0,1},$	$p_{0,15},$	3	-39.628622	-39.628622
180	$p_{0,15}, p_{0,15},$	$p_{0,17},$	1	0.652532	0.652532
181	$p_{0,15}, p_{0,17},$	$p_{0,56},$	1	0.652532	0.652532
Sum					0.6525320360931309

ΔG = -36.99839914257163
ΔE = 0.0002485363266788983
$|\text{E}|$ = 8
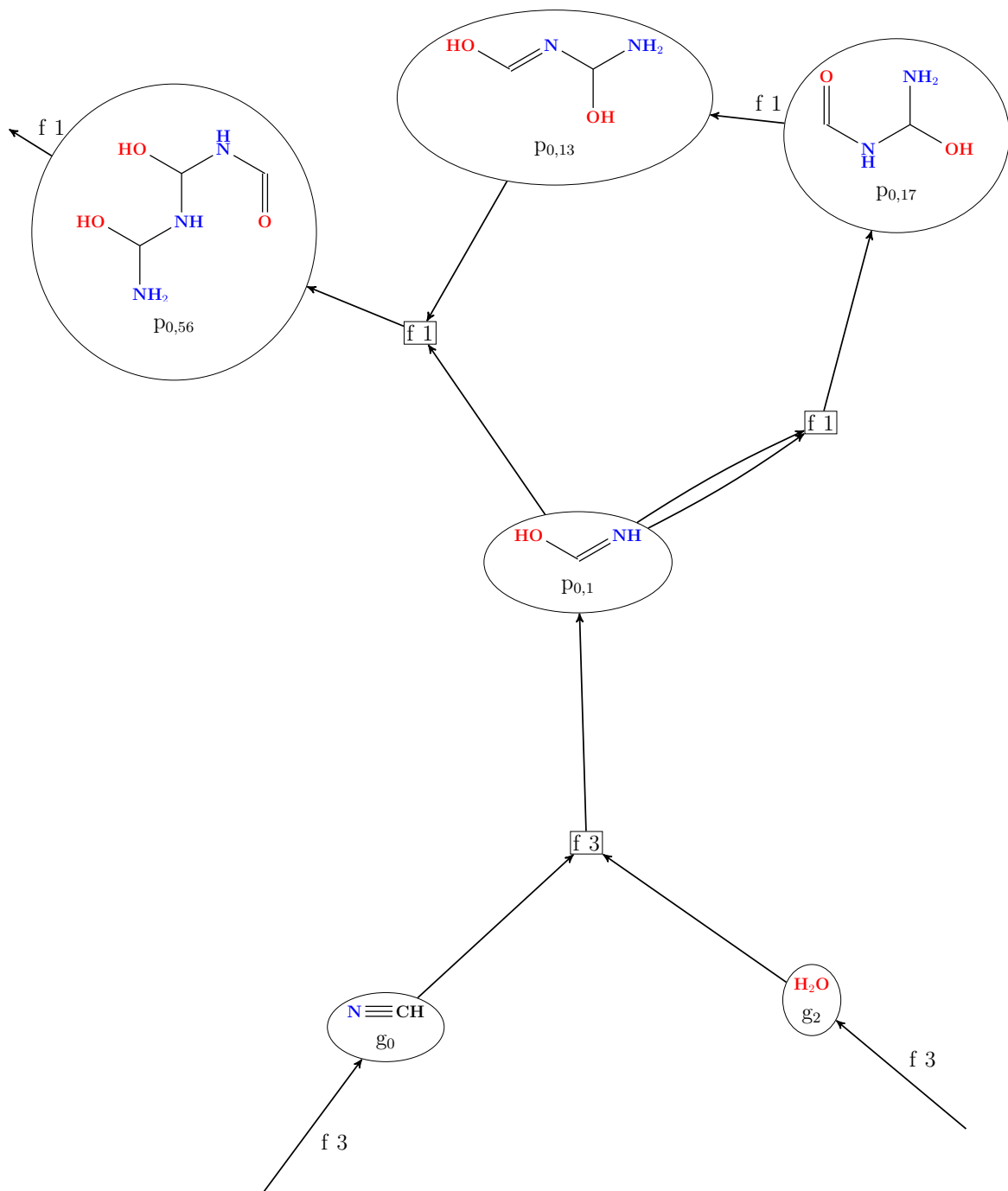$|\text{U}|$ = 4

0.3.20 Solution 19

Overall Data

```
Objective value (non-integral): 0.0043665
Vertex/Graph In Out G          logK       t_order
g_{0}       3  0   -5.507152  -3.000000 0
g_{2}       3  0   -5.068033  1.000000  0
p_{0,13}    0  0   -21.240678 -3.000000 4
p_{0,17}    0  0   -21.248844 1.000000  3
p_{0,1}     0  0   -10.610080 1.000000  1
p_{0,56}    0  1   -31.869324 -3.000000 67
```

Filtered Graph

File: `out/204_dg_0_11100_f_0_19_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	4
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	3
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.134398	-84.134398
40	$p_{0,1}, p_{0,1},$	$p_{0,17},$	1	-77.804394	-77.804394
253	$p_{0,17},$	$p_{0,13},$	1	11.464253	11.464253
263	$p_{0,1}, p_{0,13},$	$p_{0,56},$	1	-51.240661	-51.240661
Sum					11.464253024143376

ΔG = -36.99839888002166

$\Delta E = 0.0043665033701600344$

$|E| = 6$

$|U| = 4$
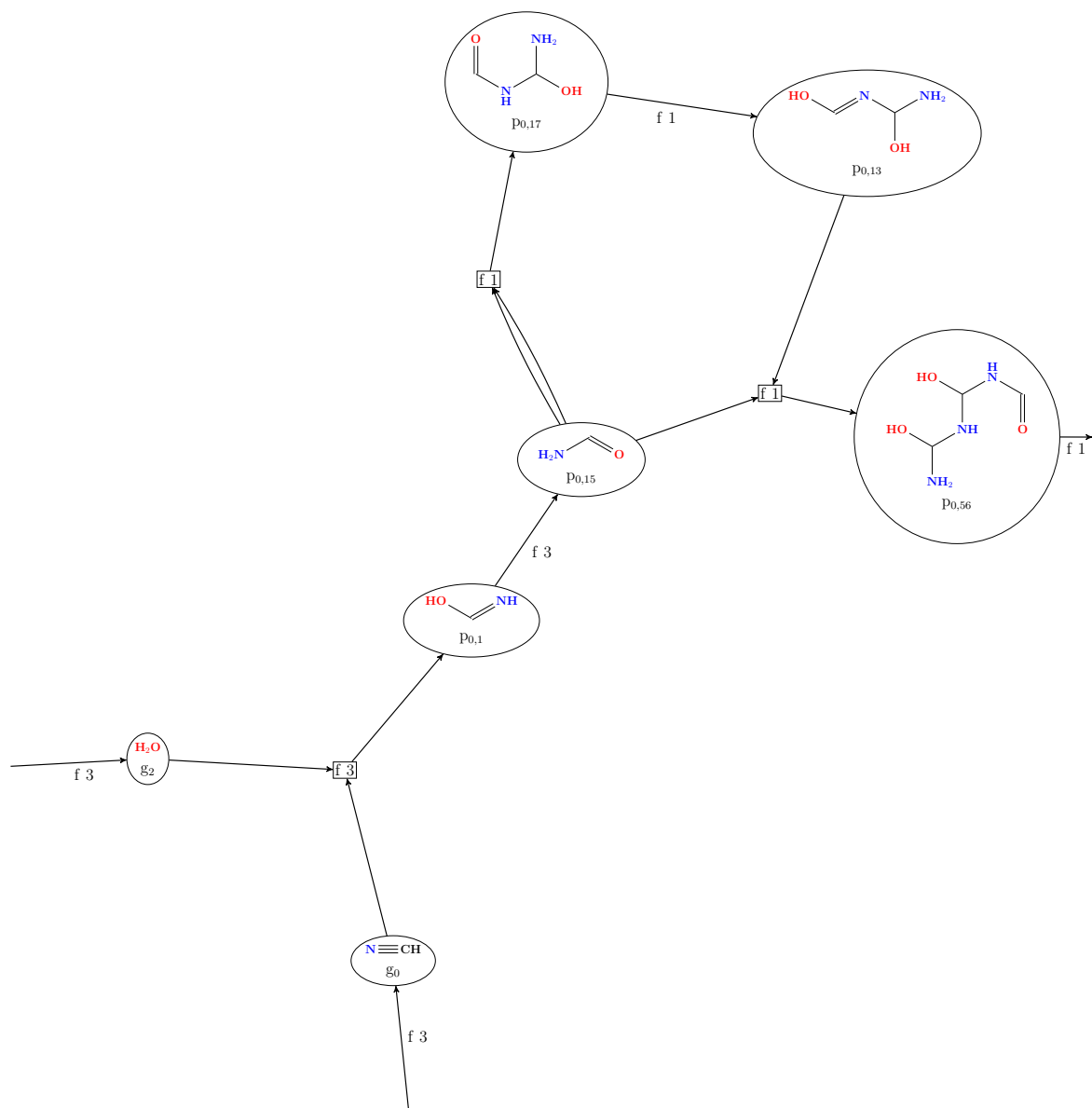
0.3.21 Solution 20

Overall Data

```
Objective value (non-integral): 0.0043665
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507152  -3.000000 0
g_{2}        3  0   -5.068033  1.000000  0
p_{0,13}     0  0   -21.240678 -3.000000 6
p_{0,15}     0  0   -10.625174 1.000000  2
p_{0,17}     0  0   -21.248844 1.000000  5
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 67
```

Filtered Graph

File: `out/213_dg_0_11100_f_0_20_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14459.025578	-3.0	-14469.002933	0
g_2	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	6
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	5
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-84.134398	-84.134398
36	$p_{0,1},$	$p_{0,15},$	3	-39.628622	-39.628622
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-11.612039	-11.612039
180	$p_{0,15}, p_{0,15},$	$p_{0,17},$	1	1.45285	1.45285
253	$p_{0,17},$	$p_{0,13},$	1	11.464253	11.464253
Sum					11.464253024143376

ΔG = -36.99839914257163
ΔE = 0.0043665033701600344
$|E| = 9$
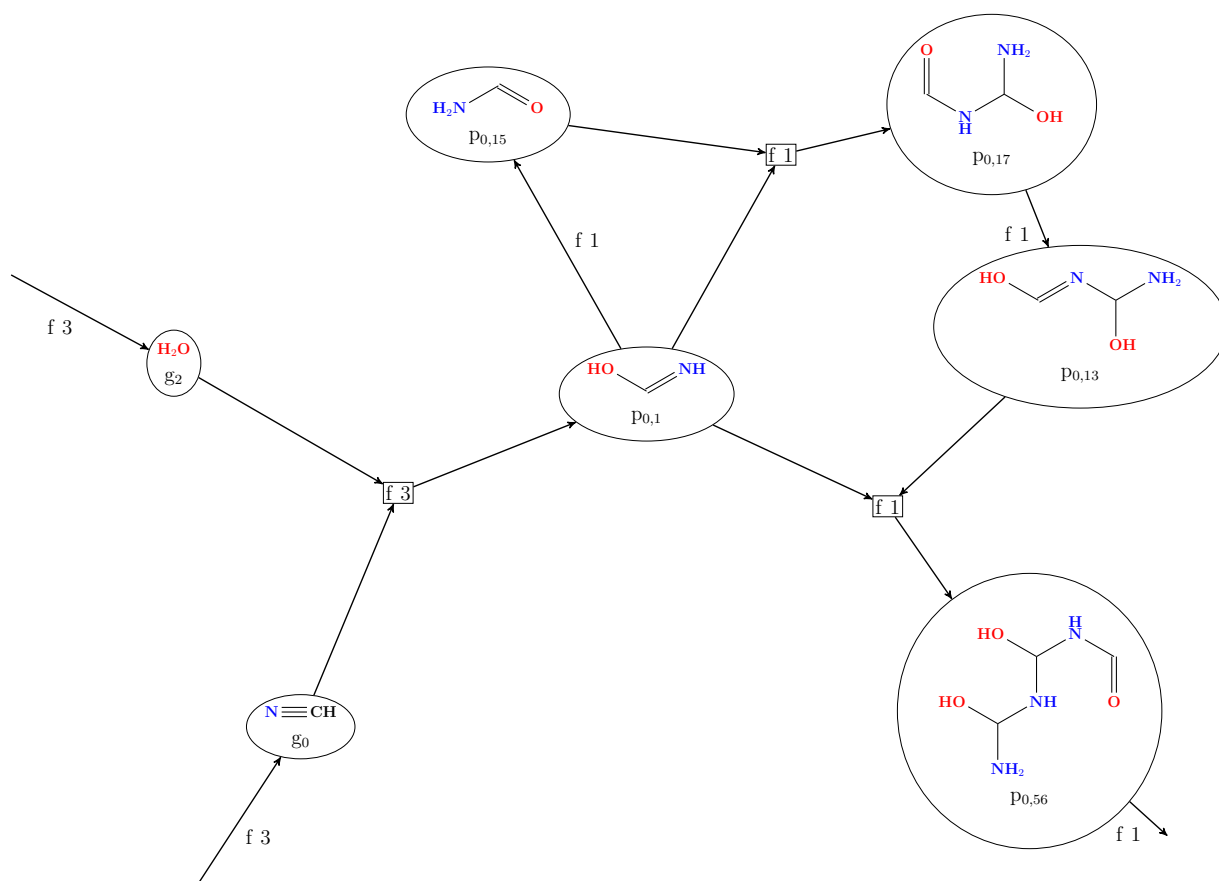$|U| = 5$

0.3.22   Solution 21

Overall Data

```
Objective value (non-integral): 0.0043665
Vertex/Graph In Out G          logK      t_order
g_{0}        3  0   -5.507141  -3.000000 0
g_{2}        3  0   -5.068043  -3.000000 0
p_{0,13}     0  0   -21.240678 -3.000000 5
p_{0,15}     0  0   -10.625174 1.000000  2
p_{0,17}     0  0   -21.248844 1.000000  4
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 67
```

Filtered Graph

File: `out/222_dg_0_11100_f_0_21_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	5
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	4
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.159348	-74.159348
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
183	$p_{0,1}, p_{0,15},$	$p_{0,17},$	1	-38.175772	-38.175772
253	$p_{0,17},$	$p_{0,13},$	1	11.464253	11.464253
263	$p_{0,1}, p_{0,13},$	$p_{0,56},$	1	-51.240661	-51.240661
Sum					11.464253024143376

ΔG = -34.005884584188216

ΔE = 0.0043665033701600344

|E| = 7

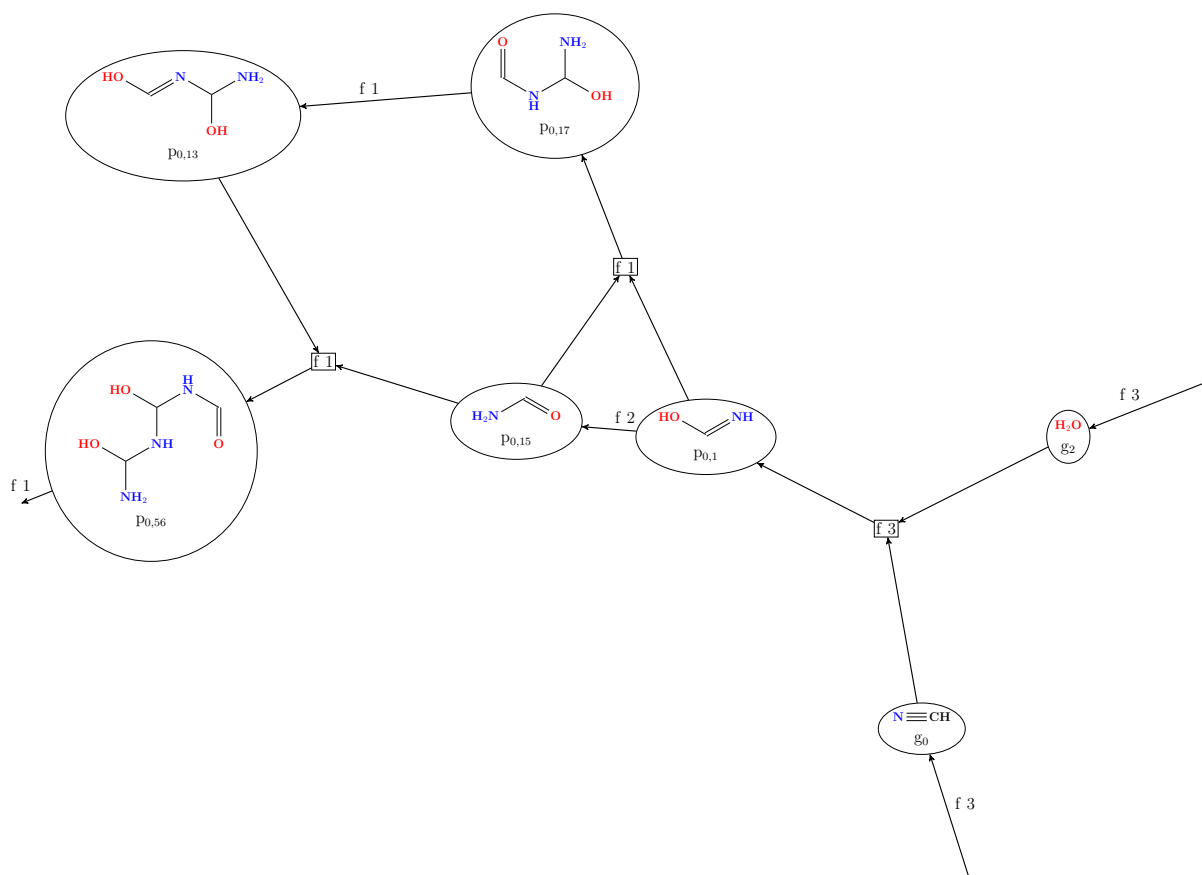|U| = 5

0.3.23 Solution 22

Overall Data

```
Objective value (non-integral): 0.0043665
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507141  -3.000000 0
g_{2}        3  0   -5.068043  -3.000000 0
p_{0,13}     0  0   -21.240678 -3.000000 5
p_{0,15}     0  0   -10.625174 1.000000  2
p_{0,17}     0  0   -21.248844 1.000000  4
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 67
```

Filtered Graph

File: `out/231_dg_0_11100_f_0_22_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	5
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	4
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.159348	-74.159348
36	$p_{0,1},$	$p_{0,15},$	2	-39.628622	-39.628622
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-11.612039	-11.612039
183	$p_{0,1}, p_{0,15},$	$p_{0,17},$	1	-38.175772	-38.175772
253	$p_{0,17},$	$p_{0,13},$	1	11.464253	11.464253
Sum					11.464253024143376

ΔG = -34.005884584188216

ΔE = 0.0043665033701600344

|E| = 8
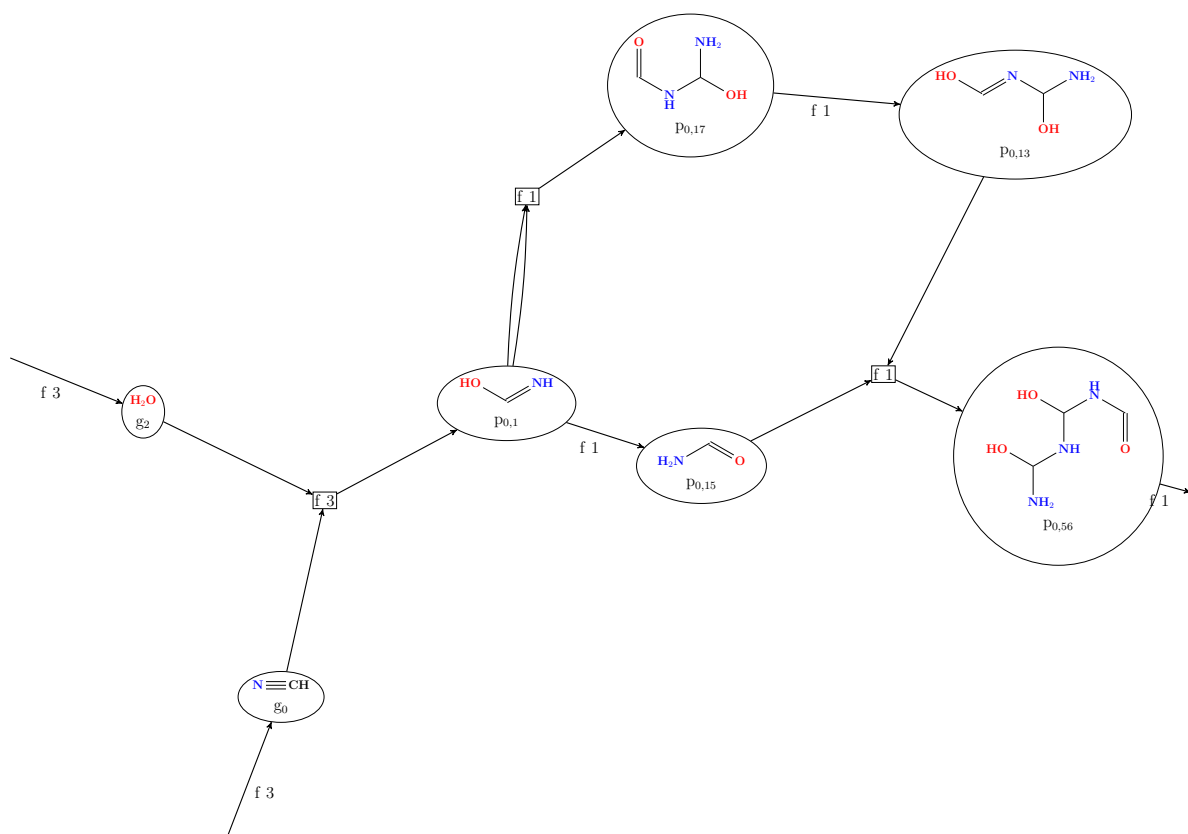
|U| = 5

0.3.24   Solution 23

Overall Data

```
Objective value (non-integral): 0.0043665
Vertex/Graph In Out G          logK       t_order
g_{0}        3   0  -5.507141  -3.000000  0
g_{2}        3   0  -5.068043  -3.000000  0
p_{0,13}     0   0  -21.240678 -3.000000  4
p_{0,15}     0   0  -10.625174 1.000000   2
p_{0,17}     0   0  -21.248844 1.000000   3
p_{0,1}      0   0  -10.610080 1.000000   1
p_{0,56}     0   1  -31.869324 -3.000000  67
```

Filtered Graph

File: `out/240_dg_0_11100_f_0_23_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	4
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	3
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.159348	-74.159348
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
40	$p_{0,1}, p_{0,1},$	$p_{0,17},$	1	-77.804394	-77.804394
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-11.612039	-11.612039
253	$p_{0,17},$	$p_{0,13},$	1	11.464253	11.464253
Sum					11.464253024143376

$\Delta G = -34.005884584188216$

$\Delta E = 0.0043665033701600344$

$|E| = 7$

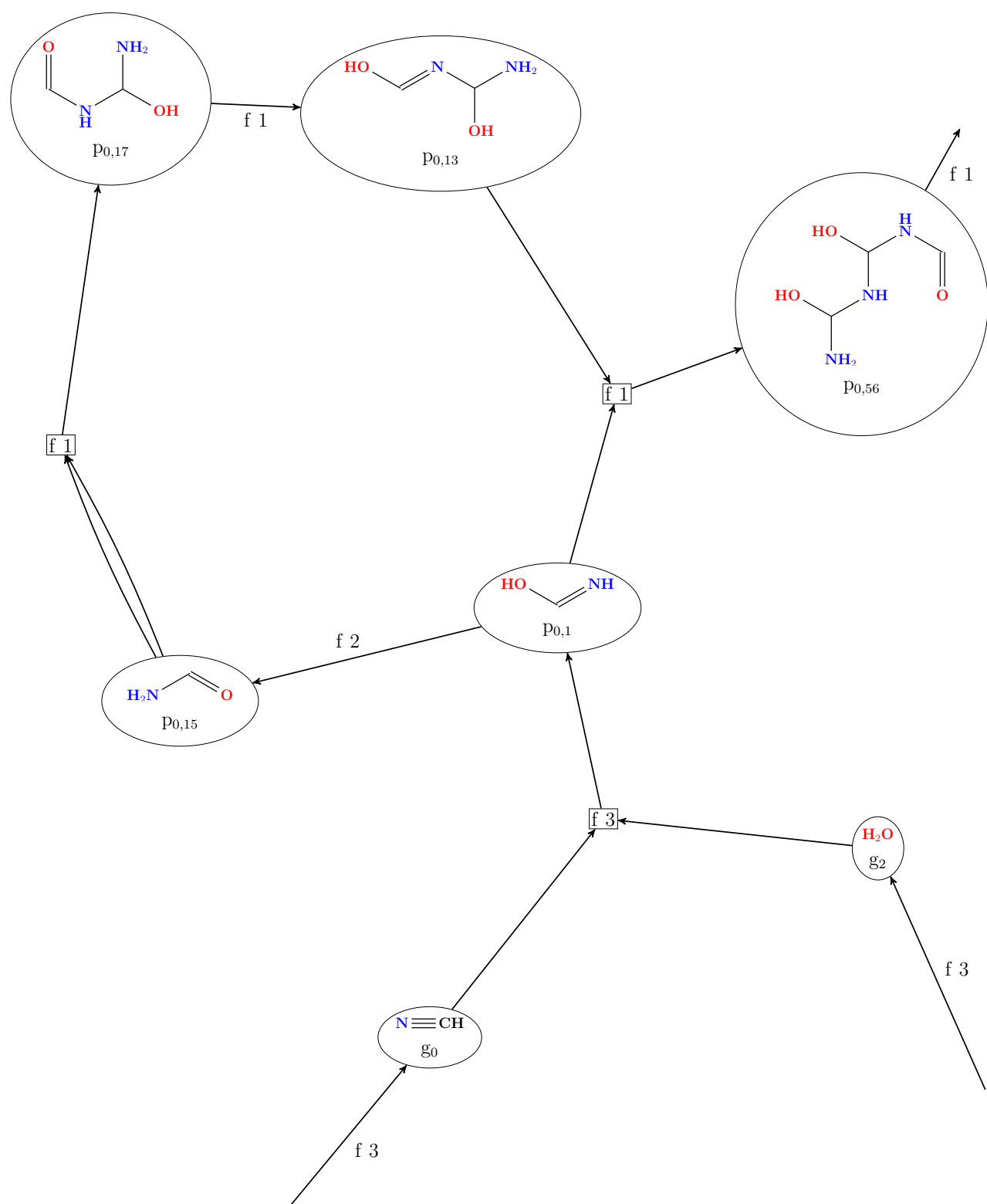$|U| = 5$

0.3.25 Solution 24

Overall Data

```
Objective value (non-integral): 0.0043665
Vertex/Graph In Out G          logK       t_order
g_{0}        3  0   -5.507141  -3.000000 0
g_{2}        3  0   -5.068043  -3.000000 0
p_{0,13}     0  0   -21.240678 -3.000000 6
p_{0,15}     0  0   -10.625174 1.000000  2
p_{0,17}     0  0   -21.248844 1.000000  5
p_{0,1}      0  0   -10.610080 1.000000  1
p_{0,56}     0  1   -31.869324 -3.000000 67
```

Filtered Graph

File: `out/249_dg_0_11100_f_0_24_filt`

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	x_v^K	$x_v^{\Delta G}$	t_v
g_0	3	0	-14458.99666	-3.0	-14468.974015	0
g_2	3	0	-13306.144961	-3.0	-13316.122316	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	-3.0	-55777.368484	6
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	5
$p_{0,56}$	0	1	-83672.898792	-3.0	-83682.876147	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\overline{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-74.159348	-74.159348
36	$p_{0,1},$	$p_{0,15},$	2	-39.628622	-39.628622
180	$p_{0,15}, p_{0,15},$	$p_{0,17},$	1	1.45285	1.45285
253	$p_{0,17},$	$p_{0,13},$	1	11.464253	11.464253
263	$p_{0,1}, p_{0,13},$	$p_{0,56},$	1	-51.240661	-51.240661
Sum					11.464253024143376

ΔG = -34.00588484673818

ΔE = 0.0043665033701600344

|E| = 8

|U| = 5