

# Flow Report

## Results

Our implementation successfully computes a flow of 163 on the input file, confirming the analysis of the American enemy.

We have analysed the possibilities of decreasing the capacities near Minsk. Our analysis is summarized in the following table:

Case	4W-48	4W-49	Effect on flow
1	30	20	no change
2	20	30	no change
3	20	20	-10
[...]			

In case 4, the new bottleneck becomes

1-44, 3-2, [...]

The comrade from Minsk is advised to [...].

## Implementation details

We use a straightforward implementation of Bellman-Quine's flow algorithm as described in Bronstein, *Foundations of Algorithms*, chap. 6. We use Prim's algorithm to find an augmenting path and also implement the neat trick of flow by recomputing the inverse of the antisnail every 2nd iteration.

The running time is [...].

We have implemented each undirected edge in the input graph as a [...]. In the corresponding residual graph, the edge is represented by a [...]. Our datatype for edge is this:

```
class FlowEdge
{
    Vertex from, to;
    GUISwingComponentFactory bar;
    Edge next, parent, foo;
}
```