Calculation of the 1.582 (fat) and the 1.405 (protein) factors in the current system.

Page 183 of the Final Rule. "Both the 1.405 and the 1.582 factors are determined by calculating the change in cheese yield if an additional tenth of a pound of protein or butterfat is contained in the milk, holding everything else constant. The proposed rule used a 1.32 factor time the cheese for use in computing the protein price. The change to a factor of 1.405 reflects the use of true protein as the basis for payments rather than using a measurement of "total nitrogen" for the protein content of milk. The resulting protein price will be for a pound of "true protein".

<table>
<thead>
<tr>
<th>Component</th>
<th>percent</th>
<th>Example Calculations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk fat</td>
<td>3.50</td>
<td></td>
</tr>
<tr>
<td>Milk crude protein</td>
<td>3.20</td>
<td></td>
</tr>
<tr>
<td>Milk true protein</td>
<td>3.01</td>
<td></td>
</tr>
<tr>
<td>Cheese Moisture</td>
<td>38.00</td>
<td></td>
</tr>
</tbody>
</table>

Calculation of the Protein Factor (Assuming 75% of crude protein as casein):

\[
\frac{(3.5 \times 0.9) + ((0.75 \times 3.20) - 0.1)}{1 - (38.00/100)} \times 1.09 = \frac{(3.15 + (2.40 - 0.1))}{0.62} = 5.9405 = 9.5815
\]

Difference in Yield \((9.7133 - 9.5815) = 0.1318\) lbs of cheese per 0.1 pound crude protein or 1.318 lbs of cheese produced for one more pound of crude protein. (Rounds to 1.32)

Calculation of the Protein Factor (Assuming 78% of crude protein as casein):

\[
\frac{(3.5 \times 0.9) + ((0.78 \times 3.20) - 0.1)}{1 - (38.00/100)} \times 1.09 = \frac{(3.15 + (2.496 - 0.1))}{0.62} = 6.0223 = 9.7133
\]

Difference in Yield \((9.8874 - 9.7502) = 0.1371\) lbs of cheese per 0.1 pound crude protein or 1.371 lbs of cheese produced for one more pound of crude protein. (Rounds to 1.37)
Adjustment of 1.32 to protein factor from a crude to a true protein basis:

Ratio of Crude to True Protein : \( \frac{3.20}{3.01} = 1.0631 \)
Adjusted Protein Factor : \( 1.32 \times 1.0631 = 1.403 \)

Adjustment of 1.37 to protein factor from a crude to a true protein basis:

Ratio of Crude to True Protein : \( \frac{3.20}{3.01} = 1.0631 \)
Adjusted Protein Factor : \( 1.37 \times 1.0631 = 1.456 \)

Calculation of Fat Factor (Assuming 90% fat recovery in the cheese):

\[
\frac{(3.5 \times 0.9) + ((0.75 \times 3.20) - 0.1)}{1 - (38.00/100)} \times 1.09 = (3.15 + (2.40 - 0.1)) \times 1.09 = 5.9405 = 9.5815
\]

\[
\frac{(3.6 \times 0.9) + ((0.75 \times 3.20) - 0.1)}{1 - (38.00/100)} \times 1.09 = (3.24 + (2.40 - 0.1)) \times 1.09 = 6.0386 = 9.7397
\]

Difference in Yield \( (9.7397 - 9.5815) = 0.1582 \) lbs of cheese per 0.1 pound of fat or 1.582 lbs of cheese produced for one more pound of milk fat.