Push / Pull Processing

Eastman Kodak recommends a controlled ECN-2 process (as specified by the H-24 manual) for the optimum performance of all of its color negative films. However, it is recognized that creative control and/or physical limitations may dictate exposing film under less than ideal conditions (i.e. normal exposure). This may necessitate the use of push / pull chemical processing conditions to compensate for the non-standard exposure / speed conditions that are used for the film.

Normal ECN processing = 3 minutes (180 sec.).
This is the recommended processing time used for normal ECN exposure - (exposure of film at the rated speed index supplied by the film manufacturer)

Pull processing - compensation for over exposure of ECN film by underdevelopment of the chemical processing

- Pull 1 = 2 minutes 30 seconds (150 sec).

push processing - compensation of under exposure of ECN film by over-development of the chemical processing

- Push 1= 3 minutes 40 seconds (220 sec)
- Push 2= 4 minutes 40 seconds (280 sec)

All processing conditions are to be operated @ 106F (41.1C). These Push / Pull conditions are to be regarded as starting positions for any laboratory. The times may be varied to achieve LAD densities equal to the original normally exposed negative.

Summary (Push Processing)
Push processing is not recommended as a means to increase photographic speed. Push processing produces contrast mismatches notably in the red and green sensitive layers (red most) compared to the blue. This produces reddish- yellow highlights, and cyan- blue shadows. Push processing also produces significant increases in film granularity. Push processing combined with under exposure produces a net loss in photographic speed, higher contrast, smoky shadows, yellow highlights and grainy images, with possible slight losses in sharpness.

Summary (Pull Processing)
In a similar analysis, pull processing combined with over exposure of ECN film, produces a noticeable improvement in granularity, a reduction in overall contrast, a slight color bias (yellow shadows and blue highlights) with no perceptible change in sharpness.