

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1,2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-STD-2500B	2. DOCUMENT DATE (YYMMDD) 01 March 2001
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3. DOCUMENT TITLE National Imagery Transmission Format Version 2.1
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4. NATURE OF CHANGE (<i>Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.</i>)
<p>a. Correct definition 3.2.48.</p> <p>b. Correct paragraph 5.4.2.2, subparagraph c.</p> <p>c. Correct figure 12 in 5.4.2.2.</p> <p>See attached continuation sheet for details of the corrections.</p>

5. REASON FOR RECOMMENDATION The 'pad pixel' defined by the current 3.2.48 does not have anything to do with the 'pad pixel mask' defined by the current 3.2.49. The combination of the current 3.2.48 and 3.2.49 constitutes a misrepresentation of the way that NITF images are processed now. The special pixels of figure 12 cannot have the same name ('pad') as the special pixels of figure 13, because these two type of pixels are treated very differently. The latter are always associated with a Pad Pixel Mask Table. See attached continuation sheet for more comments.
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4. NATURE OF CHANGE

a. Correct paragraph 3.2.48

Current wording:

3.2.48 Pad Pixel. A pixel with sample values that have no significant meaning to the image. Pad pixels are used with blocked images when either the number of pixel rows in an image is not an integer multiple of the desired number of vertical image blocks, or when the number of pixel columns in an image is not an integer multiple of the desired number of horizontal image blocks.

Proposed wording:

3.2.48 Pad Pixels. Pixels added to an image to make it rectangular (or, very rarely, just to increase the size of the displayed image). They are always inside the boundary specified by NROWS and NCOLS, and are therefore significant: they add some meaning (intelligence) to an image. See figure 13 in 5.4.2.3. All pad pixels in a given image must have a sample value equal to TPXCD, and are transparent exactly when $TPXCD = 0$. Pad pixels are not to be confused with the pixels illustrated by figure 12 in 5.4.2.2, which are (1) for blocking purposes only, (2) are outside the boundaries set by NROWS and NCOLS, (3) are not significant, i.e., do not add any meaning to the displayed image, and (4) have no relationship to the five NITF fields: IC, TMRLNTH, TMRnBNDm, TPXCDLNTH, and TPXCD.

b. Correct paragraph 5.4.2.2, subparagraph c.

Current wording:

c. If the number of rows in an image is not initially an integer multiple of NPPBV, or if the number of columns is not an integer multiple of NPPBH, an application that creates the blocked image construct in NITF shall "pad" the image to an appropriate number of rows and columns so the divisibility condition is met by adding rows to the bottom and/or columns to the right side of the image, as viewed. The result is that a blocked image may have a block(s) (subarray(s)) composed of pixel values from the original image, and "pad" pixels inserted to meet block boundary conditions (figure 12). If R (the number of rows in an image) is not initially an integer multiple of NPPBV, then NBPC is the integer $[R/NPPBV] + 1$; if C (the number of columns in an image) is not initially an integer multiple of NPPBH, then NBPR is the integer $[C/NPPBH] + 1$ ($[r]$: = largest integer $< r$).

Proposed wording:

c. If the number of rows in an image is not initially an integer multiple of NPPBV, or if the number of columns is not an integer multiple of NPPBH, an application that creates the blocked image construct in NITF shall "extend" the stored image data to an appropriate number of rows and columns so the divisibility condition is met by adding rows to the bottom and/or columns to the right side of the image, as viewed. The application shall not increase NROWS or NCOLS to reflect this extension, and therefore these extra pixels are outside the display area, and will never be displayed. The result is that a blocked image may have a block(s) (subarray(s)) composed of pixel values from the original image, and "extend" pixels inserted to meet block boundary conditions (figure 12). If R (the number of rows in an image) is not initially an integer multiple of NPPBV, then NBPC is the integer $[R/NPPBV] + 1$; if C (the number of columns in an image) is not initially an integer multiple of NPPBH, then NBPR is the integer $[C/NPPBH] + 1$ ($[r]$: = largest integer $< r$).

c. Correct Figure 12, paragraph 5.4.2.2

Current wording:

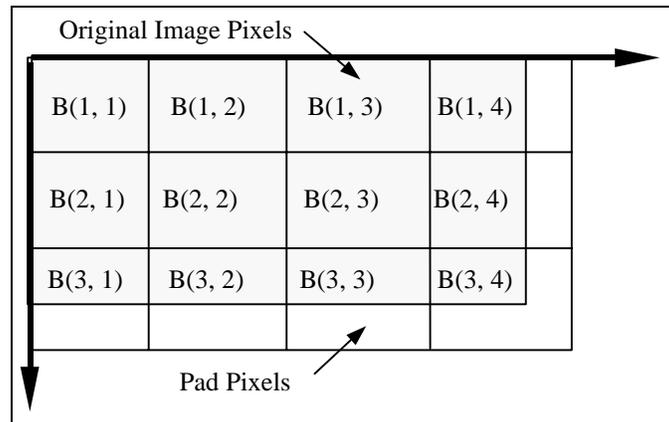


FIGURE 12. A blocked, padded image.

Proposed wording:

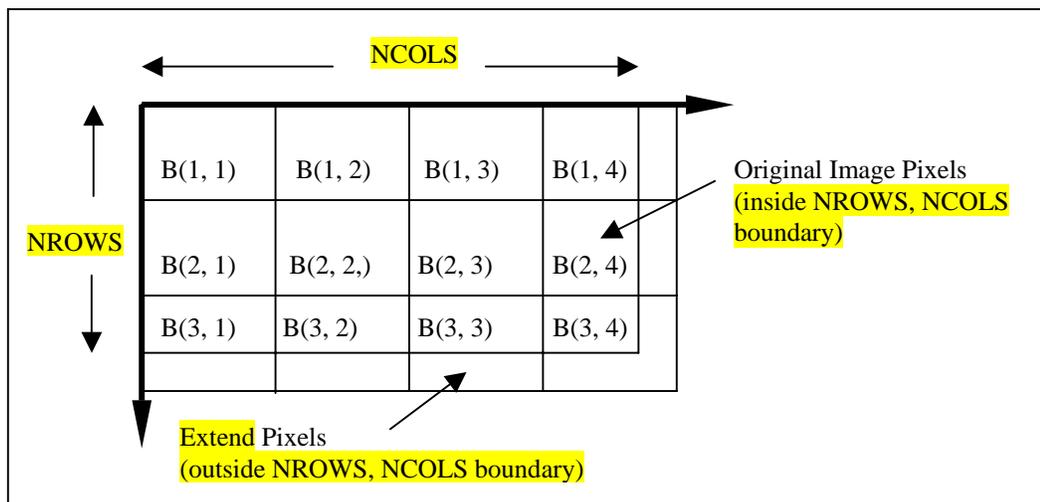


FIGURE 12. A blocked, extended image.

5. REASON FOR RECOMMENDATION (continued)

Note that section 8 (NPJE) in the “BIIF Profile for JPEG 2000” (BPJ2K) does not allow mask tables for a JPEG 2000 compressed file. But if there is no Pad Pixel Mask Table, the variable TPXCD cannot exist in the NITF file, meaning that images with pad pixels cannot be JPEG 2000 compressed.

Note also that the original 3.2.48 definition was mathematically flawed. It could be restated as follows, replacing “number of vertical image blocks” with “vertical block size,” etc., and making other corrections.

Extend Pixel. A pixel that contributes no meaning whatsoever to the displayed image. Extend pixels are used with blocked images when either the number of pixel rows in an image is not an integer multiple of the desired vertical block size, or when the number of pixel columns in an image is not an integer multiple of the desired horizontal block size.

Thus the original definition 3.2.48 was defective in at least three different ways: it was not a correct definition of ‘pad’ pixel, and it was doubly defective as a definition of ‘extend’ pixel.