1003.1^(TM)-2001/Cor 1-2001

Standard for Information Technology — Portable Operating System Interface (POSIX^®)

Technical Corrigendum 1

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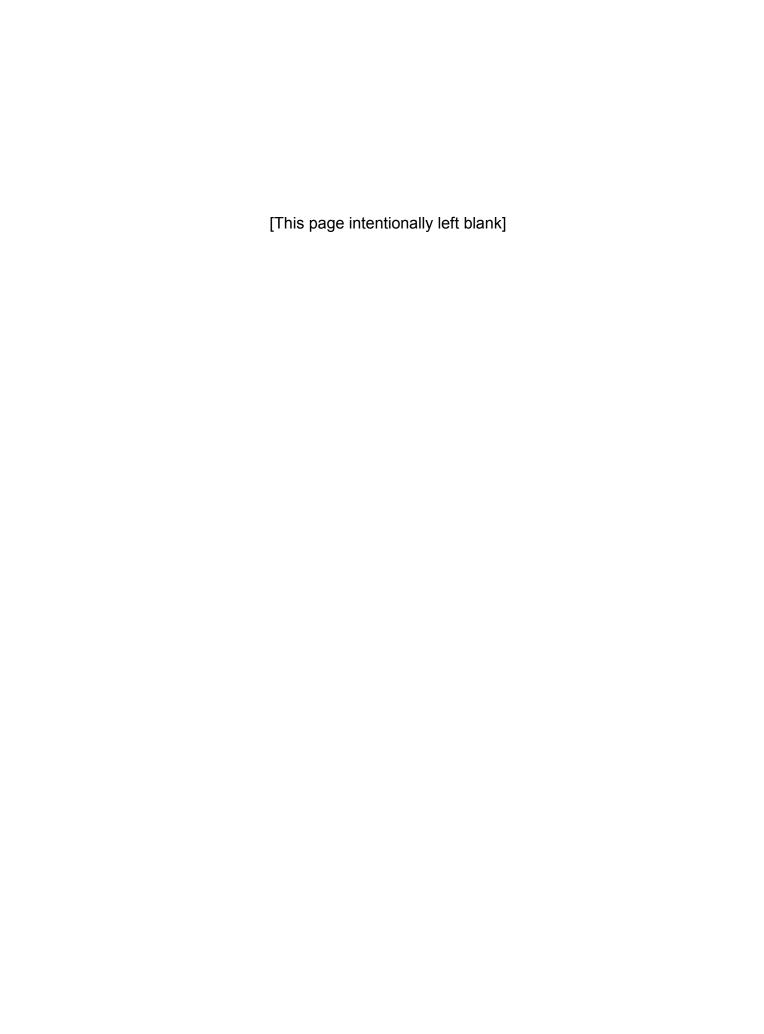
Portable Applications Standards Committee
of the
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Abstract

This Technical Corrigendum addresses problems discovered since the approval of The Open Group Base Specifications, Issue 6, IEEE Std 1003.1-2001, and ISO/IEC 9945:2002. These are mainly due to resolving integration issues raised by the merger of the original Base documents.

Keywords

application program interface (API), argument, asynchronous, basic regular expression (BRE), batch job, batch system, built-in utility, byte, child, command language interpreter, CPU, extended regular expression (ERE), FIFO, file access control mechanism, input/output (I/O), job control, network, portable operating system interface (POSIX®), parent, shell, stream, string, synchronous, system, thread, X/Open System Interface (XSI)

IEEE Std 1003.1-2001/Cor 1-2002

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1. Introduction

1.1 Scope

This Technical Corrigendum addresses issues raised in defect reports and interpretation requests submitted up until August 15, 2002, that meet all of the following criteria: (a.) They are in the scope of the approved standard. (b.) They contain no new APIs (functions/utilities); however, they may add enumeration symbols, non-function #defines, and reserve additional namespaces. (c.) They address contradictions between different parts of the standard, or add consistency between the standard and overriding standards, or address security-related problems.

2. Changes to Base Definitions

This section contains the set of changes to the original text of the Base Definitions.

```
0001  Change Number: XBD/TC1/D6/1 [XBD ERN 1]

0002  On Page: 2  Line: 69  Section: 1.1

0003  In the list of legacy interfaces not carried forward, change from:

0004    "regcmp(),"

0005  to:

0006    "regcmp(), regex(),"

0007  Change from:

0008    "step(),"

0009  to:

0010    "step(), ttyslot(), valloc(),"

0011  Rationale: This change is for consistency with the long scope document.


0012  Change Number: XBD/TC1/D6/2 [XBD ERN 3]

0013  On Page: 13  Line: 537  Section: 1.5.1

0014  In the Codes section, change from:

0015    "Thread Stack Address Size"

0016  to:

0017    "Thread Stack Size Attribute"

0018  On Page: 401  Line: 14133  Section: <unistd.h>

0019  Change from:

0020    "Thread Stack Address Size"

0021  to:

0022    "Thread Stack Size Attribute"
```

0023 **Change Number: XBD/TC1/D6/3** [bwg2002-001]

0024 On Page: 20 Line: 794-797 Section: 2.1.4.2

0025 In XSI Shell and Utilities Conformance, in the fifth bullet (describing
0026 the XSI Development Utilities option):

0027 Add "nm" to the list of utilities in the table on Lines 794-797.

0028 **Change Number: XBD/TC1/D6/4** [XBD ERN 11]

0029 On Page: 100 Line: 3129 Section: 4.10

0030 In Memory Synchronization, add the following new paragraph in Section
0031 4.10 beneath the table of functions:

0032 "The pthread_once() function shall synchronize memory for the
0033 first call in each thread for a given pthread_once_t object."

0034 **Change Number: XBD/TC1/D6/5** [XBD ERN 13,14]

0035 On Page: 142 Line: 4882 Section: 7.3.3.1

0036 In the LC_MONETARY Category of the POSIX locale, add after Line 4882:

```
0037   int_p_cs_precedes    -1
0038   int_p_sep_by_space   -1
0039   int_n_cs_precedes    -1
0040   int_n_sep_by_space   -1
0041   int_p_sign_posn      -1
0042   int_n_sign_posn      -1
```

0043 Add after Line 4902 (in the table on Page 143):

```
0044   int_p_cs_precedes    --    N/A   {CHAR_MAX}   -1
0045   int_p_sep_by_space   --    N/A   {CHAR_MAX}   -1
0046   int_n_cs_precedes    --    N/A   {CHAR_MAX}   -1
0047   int_n_sep_by_space   --    N/A   {CHAR_MAX}   -1
0048   int_p_sign_posn      --    N/A   {CHAR_MAX}   -1
0049   int_n_sign_posn      --    N/A   {CHAR_MAX}   -1
```

0050 On Page: 156 Line: 5477 Section: 7.4.2

0051 Add after Line 5477:

```
0052   | 'int_p_cs_precedes' | 'int_p_sep_by_space'
0053   | 'int_n_cs_precedes' | 'int_n_sep_by_space'
0054   | 'int_p_sign_posn' | 'int_n_sign_posn'
```

0055 Rationale: The LC_MONETARY int_[np]_* values are missing from the POSIX
0056 locale definition.

0057 **Change Number: XBD/TC1/D6/6** [Defect raised at May 2002 Plenary]

0058 On Page: 140 Line: 4787-4792 Section: 7.3.3, LC_MONETARY

0059 Change from:

```
0060   int_curr_symbol  The international currency symbol. The operand shall
0061                    be a four-character string, with the first three
0062                    characters containing the alphabetic international
0063                    currency symbol in accordance with those specified in
0064                    the ISO 4217:1995 standard. The fourth character
0065                    shall be the character used to separate the
```

```
0066                    international currency symbol from the monetary
0067                    quantity.
0068  to:

0069    int_curr_symbol  The international currency symbol. The operand shall
0070                     be a four-character string, with the first three
0071                     characters containing the alphabetic international
0072                     currency symbol. The international currency symbol
0073                     should be chosen in accordance with those specified
0074                     in the ISO 4217 standard. The fourth character shall
0075                     be the character used to separate the international
0076                     currency symbol from the monetary quantity.

0077  Rationale: The text as written with the reference to ISO 4217:1995 did
0078  not allow for the Euro. The correction is stated using the term
0079  "should" intentionally, in order to make this a recommendation
0080  rather than a restriction on implementations. This allows for
0081  flexibility in implementations on how they handle future currency
0082  symbol additions. The approval year of the ISO 4217 standard is
0083  intentionally omitted to allow for future versions.
```

0084 **Change Number: XBD/TC1/D6/7** [XBD ERN 16]

```
0085  On Page: 164  Line: 5797  Section: 8.3

0086  In the TZ Environment variable, change from:

0087    "The contents of the environment variable named TZ shall be used by
0088    the ctime(), localtime(), strftime(), and mktime() functions ..."

0089  to:

0090    "The contents of the environment variable named TZ shall be used by
0091    the ctime(), localtime(), strftime(), mktime(),
0092    [Shade on]ctime_r(), and localtime_r()[Shade off] functions ..."

0093  [Editorial Note: The shading denoted in [] should be marked with
0094  the TSF margin code.]

0095  Rationale: The description of the TZ environment variable omits the
0096  names of some functions which are defined as using it; specifically,
0097  the thread-safe variants of the ctime() and localtime() functions.
```

0098 **Change Number: XBD/TC1/D6/8** [XBD ERN 20]

```
0099  On Page: 236  Line: 8313  Section: <glob.h>

0100  Change from:

0101    int glob(const char *restrict, int,
0102          int (*restrict)(const char *, int), glob_t *restrict);

0103  to:

0104    int glob(const char *restrict, int, int (*)(const char *, int),
0105          glob_t *restrict);

0106  Rationale: When the restrict type qualifier was added to the glob()
0107  Prototype declaration in an early draft, it was applied to a function
0108  Pointer argument; per ISO/IEC 9899:1999 such a pointer type shall not be
0109  restrict-qualified. (The definition in System Interfaces, Page 573,
0110  Line 18778-18779 is correct.)
```

0111 **Change Number: XBD/TC1/D6/9** [XBD ERN 21]

0112 On Page: 244 Line: 8586 Section: <langinfo.h> (CRNCYSTR)

0113 Change from:

0114   "Local currency symbol, preceded by '-' if the symbol
0115   should appear before the value, '+' if the symbol should
0116   appear after the value, or '.' if the symbol should replace
0117   the radix character."

0118 to:

0119   "Local currency symbol, preceded by '-' if the symbol
0120   should appear before the value, '+' if the symbol should
0121   appear after the value, or '.' if the symbol should replace
0122   the radix character. If the local currency symbol is the
0123   empty string, implementations may return the empty string ("")."

0124 Rationale: The addition of the last sentence has been made to
0125 accommodate historic practice. This is an application-visible change.
0126 Implementations may choose either behavior. Applications should allow
0127 for the empty string to be returned.

0128 **Change Number: XBD/TC1/D6/10** [XBD ERN 22]

0129 On Page: 253 Line: 8923 Section: <limits.h>

0130 In Minimum Values, _POSIX_CHILD_MAX, change from:

0131   "Value: 6"

0132 to:

0133   "Value: 25"

0134 Rationale: This corrects an editorial error in misapplying the
0135 FIPS 151-2 alignment for this value.

0136 **Change Number: XBD/TC1/D6/11** [XBD ERN 23,24]

0137 On Page: 277 Line: 9873,9906 Section: <netdb.h>

0138 Insert the following text between Lines 9873 and 9874:

0139   NI_NUMERICSCOPE   For IPv6 addresses, the numeric form of the scope
0140   identifier is returned instead of its name.

0141 On Line 9906, change from:

0142   int getnameinfo(const struct sockaddr *restrict, socklen_t,
0143   char *restrict, socklen_t, char *restrict,
0144   socklen_t, unsigned);

0145 to:

0146   int getnameinfo(const struct sockaddr *restrict, socklen_t,
0147   char *restrict, socklen_t, char *restrict,
0148   socklen_t, int);

0149 Rationale: IETF IPv6 API specification alignment.

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0150 **Change Number: XBD/TC1/D6/12** [XBD ERN 25,26]

0151 On Page: 279   Line: 9979   Section: <netinet/in.h>

0152 On Page 279, Line 9979, insert "const" in front of
0153 "struct in6_addr in6addr_any".

0154 On Page 280, Line 9985, insert "const" in front of
0155 "struct in6_addr in6addr_loopback"

0156 Rationale: IETF IPv6 API specification alignment.

0157 **Change Number: XBD/TC1/D6/13** [XBD ERN 27,28,30,31]

0158 On Page: 287   Line: 10196-10198   Section: <pthread.h>

0159 Shade Line 10196 and mark with the TPI margin code.
0160 Shade Line 10197 and mark with the TPP|TPI margin codes.
0161 Shade Line 10198 and mark with the TPP margin code.

0162 On Page 288, shade Lines 10238 and 10250 and mark with the TSS
0163 margin code.

0164 On Page 289-290, shade Lines 10310-10311, 10317, 10333-10334, and 10336
0165 and mark with the TSH margin code.

0166 On page 290, shade Lines 10324-10327 and mark with the TMO margin code.

0167 Rationale: Shading errors in contradiction with the function definitions
0168 in the System Interfaces volume.

0169 **Change Number: XBD/TC1/D6/14** [XBDft3 ERN 2]

0170 On Page: 303   Line: 10810-10816   Section: <signal.h>

0171 In the DESCRIPTION on Line 10810, change from:

0172   "What to do on receipt of signal"

0173 to:

0174   "Pointer to a signal-catching function or one of the macros
0175   SIG_IGN or SIG_DFL".

0176 On Lines 10815-10816, change from:

0177   "Pointer to signal handler function or one of the macros SIG_IGN
0178   or SIG_DFL"

0179 to:

0180   "Pointer to a signal-catching function".

0181 **Change Number: XBD/TC1/D6/15** [XBDft3 ERN 3]

0182 On Page: 303   Line: 10814   Section: <signal.h>

0183 Change from:

0184   void (*)(int, siginfo_t *, void *) sa_sigaction

0185 to:

0186   void (*sa_sigaction)(int, siginfo_t *, void *)

0187 Rationale: The declaration given for the sa_sigaction member of
0188 struct sigaction is not syntactically valid.

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0189 **Change Number: XBD/TC1/D6/16** [XBD ERN 36]

0190 On Page: 340 Line: 12114 Section: <sys/mman.h>

0191 Change the margin code for Line 12114 to MLR.
0192 Add ML as the margin code for Line 12115.
0193 Change the margin code for Line 12119 to MLR.
0194 Add ML as the margin code for Line 12120.

0195 Rationale: Margin code and shading errors. The functions mlock()
0196 and munlock() should be marked as part of the _POSIX_MEMLOCK_RANGE
0197 option.

0198 **Change Number: XBD/TC1/D6/17** [XBD ERN 34]

0199 On Page: 359 Line: 12743 Section: <sys/stat.h>

0200 Add the following text to the RATIONALE:

0201   "The unit for the st_blocks member of the stat structure is not
0202   defined within the standard. In some implementations it is 512 bytes.
0203   It may differ on a filesystem basis. There is no correlation between
0204   values of the st_blocks and st_blksize, and the f_bsize (from
0205   <sys/statvfs.h>) structure members.

0206   Traditionally some implementations defined the multiplier for st_blocks
0207   in <sys/param.h> as the symbol DEV_BSIZE."

0208 **Change Number: XBD/TC1/D6/18** [XBDft2 ERN 2]

0209 On Page: 360 Line: 12795 Section: <sys/statvfs.h>

0210 Change from:

0211   "ST_NOSUID   Does not support setuid()/setgid() semantics."

0212 to:

0213   "ST_NOSUID   Does not support the semantics of the ST_ISUID and
0214   ST_ISGID file mode bits."

0215 **Change Number: XBD/TC1/D6/19** [XBD ERN 42]

0216 On Page: 382 Line: 13468 Section: <termios.h>

0217 Change from:

0218   "ECHOK"

0219 to:

0220   "ECHOKE"

0221 Rationale: The APPLICATION USAGE is inconsistent with the symbols
0222 reserved in System Interfaces, Section 2.2.2, Page 18.

0223 **Change Number: XBD/TC1/D6/20** [XBD ERN 37]

0224 On Page: 399,407-408 Line: 14061,14443,14460 Section: <unistd.h>

0225 Add after Line 14061 (before _POSIX_JOB_CONTROL):

0226   "_POSIX_IPV6
0227   The implementation supports the IPv6 option. If this symbol has a
0228   value other than -1 or 0, it shall have the value 200112L."

0229 Add to the list of symbolic constants for sysconf() after Line 14443
0230 (before _SC_JOB_CONTROL):

0231   "_SC_IPV6"

0232 Add to the list of symbolic constants for sysconf() after Line 14460
0233 (before _SC_RE_DUP_MAX):

0234   "_SC_RAW_SOCKETS"

0235 Rationale: The _POSIX_IPV6 symbol appears in Section 2.1.3, Conformance,
0236 but is not included in <unistd.h>; similarly _POSIX_RAW_SOCKETS is
0237 included in <unistd.h> and should have a corresponding _SC entry.

0238 **Change Number: XBD/TC1/D6/21** [XBDft3 ERN 4]

0239 On Page: 405 Line: 14325,14329,14333 Section: <unistd.h>

0240 In the DESCRIPTION, Constants for Functions, on Lines 14325, 14329,
0241 and 14333, change from:

0242   "... a programming model with 64-bit int, long, pointer, and
0243   off_t types."

0244 to:

0245   "... a programming model with 32-bit int and 64-bit long, pointer,
0246   and off_t types."

0247 **Change Number: XBD/TC1/D6/22** [XSH ERN 12]

0248 On Page: 406-409 Line: 14384-14520 Section: <unistd.h>

0249 Remove all margin codes and shading for the _PC* and _SC* constants
0250 in this header.

0251 Rationale: These constants are required to be mandatory.

0252 **Change Number: XBD/TC1/D6/23** [XBDft4 ERN 1]

0253 On Page: 407,408 Line: 14400,14477 Section: <unistd.h>

0254 Insert before _PC_SYNC_IO on Line 14400:

0255   _PC_SYMLINK_MAX

0256 Insert before _SC_SYNCHRONIZED_IO on Line 14477:

0257   _SC_SYMLOOP_MAX

0258 Rationale: These constants were omitted.

7

0259 **Change Number: XBD/TC1/D6/24** [XBD ERN 41]

0260 On Page: 410 Line: 14558 Section: <unistd.h> (fsync())

0261 Shade Line 14558 and mark with the FSC margin code.

0262 Rationale: Consistency with the System Interfaces volume.

0263 **Change Number: XBD/TC1/D6/25** [XBD ERN 40]

0264 On Page: 412 Line: 14653 Section: <unistd.h>

0265 Add to the end of the APPLICATION USAGE section:

0266   "New applications should not use _XOPEN_SHM or _XOPEN_ENH_I18N."

0267 **Change Number: XBD/TC1/D6/26** [XBDft4 ERN 2]

0268 Page: 421 Line: 14989 Section: <wchar.h>

0269 Replace "None" in the APPLICATION USAGE section with:

0270   "The iswblank() function was a late addition to the ISO C standard and
0271   introduced at the same time as the ISO C standard introduced
0272   <wctype.h>, which contains all of the isw* functions. The Open Group
0273   specification had previously aligned with the MSE draft and had
0274   introduced the rest of the isw* functions into <wchar.h>. For
0275   backwards-compatibility, the original set of isw* functions, without
0276   iswblank(), are permitted (as an XSI extension) in <wchar.h>. For
0277   maximum portability, applications should include <wctype.h> in order
0278   to obtain declarations for the isw* functions."

3. Changes to System Interfaces

This section contains the set of changes to the original text of the System Interfaces.

0279 **Change Number: XSH/TC1/D6/1** [XBDtc1d2 ERN 1]

0280 On Page: 10 Line: 398 Section: 1.8.1

0281 In Codes, change from:

0282   "Thread Stack Address Size"

0283 to:

0284   "Thread Stack Size Attribute"

0285 **Change Number: XSH/TC1/D6/2** [XSH ERN 1]

0286 On Page: 17 Line: 642 Section: 2.2.2 (The Name Space)

0287 Delete "POSIX_, _POSIX_, posix_" from the Prefix column
0288 of the table on Page 17 , Line 642.

0289 Rationale: This text contradicts Lines 570-574 which states that
0290 "The prefixes posix_, POSIX_, and _POSIX are reserved for use by
0291 IEEE Std 1003.1-2001 and other POSIX standards. Implementations
0292 may add symbols to the headers shown in the following table, provided
0293 the identifiers ... do not use the reserved prefixes posix_, POSIX_,
0294 or _POSIX."

0295 **Change Number: XSH/TC1/D6/3** [XSH ERN 2]

0296 On Page: 18 Line: 659 Section: 2.2.2 (The Name Space)

0297 Change from:

0298   "PRI[a-z],SCN[a-z]"

0299 to:

0300   "PRI[Xa-z],SCN[Xa-z]"

0301 Rationale: The C Standard allows implementations to define macros
0302 of the form "PRI" or "SCN" followed by any lowercase letter or
0303 "X" in <inttypes.h>. (ISO/IEC 9899:1999 P400, Subclause 7.26.4.)

0304 **Change Number: XSH/TC1/D6/4** [XSH ERN 3]

0305 On Page: 18 Line: 670 Section: 2.2.2 (The Name Space)

0306 Delete Lines 670-671.

0307 Add a new section after the table before Line 688

0308   "The following are used to reserve complete names for the
0309   <stdint.h> header:

0310   INT[0-9A-Za-z_]*_MIN, INT[0-9A-Za-z_]*_MAX, INT[0-9A-Za-z_]*_C
0311   UINT[0-9A-Za-z_]*_MIN, UINT[0-9A-Za-z_]*_MAX, UINT[0-9A-Za-z_]*_C"

0312 Rationale: Alignment with the ISO C Standard.

0313 **Change Number: XSH/TC1/D6/5** [XSHft3 ERN 1]

0314 On Page: 31 Line: 1250 Section: Signal_Actions

0315 Change from:

0316 "Setting a signal action to SIG_DFL for a signal that is pending, and
0317 whose default action is to ignore the signal (for example, SIGCHLD),
0318 shall cause the pending signal to be discarded, whether or not it
0319 is blocked.

0320 The default action for SIGCONT is to resume execution at the point
0321 where the process was stopped, after first handling any pending
0322 unblocked signals. [RTS]If the Realtime Signals Extension option
0323 is supported, any queued values pending shall be discarded and the
0324 resources used to queue them shall be released and returned to the
0325 system for other use.[/RTS]"

0326 to:

0327 "Setting a signal action to SIG_DFL for a signal that is pending, and
0328 whose default action is to ignore the signal (for example, SIGCHLD),
0329 shall cause the pending signal to be discarded, whether or not it
0330 is blocked. [RTS]If the Realtime Signals Extension option is
0331 supported, any queued values pending shall be discarded and the
0332 resources used to queue them shall be released and returned to the
0333 system for other use.[/RTS]

0334 The default action for SIGCONT is to resume execution at the point
0335 where the process was stopped, after first handling any pending
0336 unblocked signals."

0337 Rationale: There is an editorial mistake in Section 2.4.3, Lines
0338 1253-7. The RTS marked text on Lines 1254-1257 ought to belong to
0339 the paragraph above (Lines 1250-1252) and be disjoint from the first
0340 sentence commencing at Line 1253.

0341 **Change Number: XSH/TC1/D6/6** [XSHft4 ERN 1]

0342 On Page: 33 Line: 1336 Section: 2.4.3

0343 Add the abort() function to the list of async-cancel-safe functions.

0344 **Change Number: XSH/TC1/D6/7** [XSH ERN 5]

0345 On Page: 43 Line: 1759-1770 Section: 2.8.3.1 (Memory Locking)

0346 Remove the first paragraph explaining the missing shading.

0347 Shade the second paragraph and add the margin code MLR.

0348 Shade the third paragraph and add the margin code ML|MLR.

0349 Rationale: Corrections to option shading.

0350 **Change Number: XSH/TC1/D6/8** [XSHft2 ERN 1]

0351 On Page: 55 Line: 2270 Section: 2.9.5.2

0352 In the list of functions with Cancelation points on Lines 2261-2274,
0353 add "pselect()" after "pread()".

0354 Rationale: This was missed in the integration of this new function.

0355 **Change Number: XSH/TC1/D6/9** [XSH ERN 8]

0356 On Page: 85 Line: 3372-3374 Section: _Exit() (pointer page)

0357 Replace the SYNOPSIS with:

0358   #include <stdlib.h>

0359   void _Exit(int status);

0360   #include <unistd.h>

0361   void _exit(int status);

0362 Rationale: Consistency with the interface page.

0363 **Change Number: XSH/TC1/D6/10** [XSHft4 ERN 1]

0364 On Page: 92 Line: 3543,3562,3569 Section: abort

0365 In the DESCRIPTION, change from:

0366   "[CX]The abnormal termination processing shall include at least
0367   the effect of fclose() on all open streams and the default actions
0368   defined for SIGABRT.

0369   [XSI]On XSI-conformant systems, in addition the abnormal
0370   termination processing shall include the effect of fclose() on
0371   message catalog descriptors."

0372 to:

0373   "[CX]The abnormal termination processing shall include the default
0374   actions defined for SIGABRT and may include an attempt to effect
0375   fclose() on all open streams."

0376 Add to the RATIONALE section for abort:

0377   "C99 requires the abort() function to be async-signal-safe.
0378   Since this standard defers to ISO C, this required a change to
0379   the DESCRIPTION from 'shall include the effect of
0380   fclose()' to "may include an attempt to effect fclose()".

0381   The revised wording permits some backwards-compatibility and avoids
0382   a potential deadlock situation.

0383   The Open Group Resolution bwg2002-003 is applied, removing the
0384   following XSI shaded paragraph from the DESCRIPTION:

0385   "On XSI-conformant systems, in addition the abnormal termination
0386   processing shall include the effect of fclose() on message
0387   catalog descriptors."

0388   There were several reasons to remove this paragraph:

0389   - No special processing of open message catalogs needs to be performed
0390   prior to abnormal process termination.

0391   - The main reason to specifically mention that abort() includes the
0392   effect of fclose() on open streams is to flush output queued on the
0393   stream. Message catalogs in this context are read-only and, therefore,
0394   do not need to be flushed.

0395   - The effect of fclose() on a message catalog descriptor is
0396   unspecified. Message catalog descriptors are allowed, but not required
0397   to be implemented using a file descriptor, but there is no mention
0398   in the standard of a message catalog descriptor using a standard I/O

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0399   stream FILE object as would be expected by fclose()."

0400 Add to the CHANGE HISTORY:

0401   "Changes are made to the DESCRIPTION for C99 alignment.

0402   The Open Group Resolution bwg2002-003 is applied."

0403 **Change Number: XSH/TC1/D6/11** [XSH ERN 9]

0404 On Page: 149 Line: 5244 Section: bsearch

0405 In the DESCRIPTION, add at the end of Line 5244:

0406   "If the nel argument has the value zero, the comparison function
0407   pointed to by compar shall not be called and no match shall be found."

0408 Add at Line 5247 the new paragraphs:

0409   "The application shall ensure that the comparison function pointed to
0410   by compar does not alter the contents of the array. The implementation
0411   may reorder elements of the array between calls to the comparison
0412   function, but shall not alter the contents of any individual element.

0413   The implementation shall ensure that the first argument is always a
0414   pointer to the key.

0415   When the same objects (consisting of width bytes, irrespective of
0416   their current positions in the array) are passed more than once to the
0417   comparison function, the results shall be consistent with one another.
0418   That is, the same object shall always compare the same way with the
0419   key."

0420 Replace Line 5313 (on Page 150) with:

0421   "The requirement that the second argument (hereafter referred to as p)
0422   to the comparison function is a pointer to an element of the array
0423   implies that for every call all of the following expressions are nonzero:

0424   ((char *)p - (char *)base) % width == 0
0425   (char *)p >= (char *)base
0426   (char *)p < (char *)base + nel * width"

0427 **Change Number: XSH/TC1/D6/12** [XSH ERN 10]

0428 On Page: 203 Line: 6879 Section: close

0429 In the DESCRIPTION, change from:

0430   "If fildes refers to the master side of a pseudo-terminal, and this is
0431   the last close, a SIGHUP signal shall be sent to the process group, if
0432   any, for which the slave side of the pseudo-terminal is the
0433   controlling terminal."

0434 to:

0435   "If fildes refers to the master side of a pseudo-terminal, and this
0436   is the last close, a SIGHUP signal shall be sent to the controlling
0437   process, if any, for which the slave side of the pseudo-terminal is
0438   the controlling terminal."

0439 Rationale: The behavior of pseudo-terminals and regular terminals
0440 should be as much alike as possible in this case; the change achieves
0441 that and matches historical behavior.

0442 **Change Number: XSH/TC1/D6/13** [XSH ERN 11]

0443 On Page: 210 Line: 7118-7119,7122 Section: closelog

0444 In the EXAMPLES section, Lines 7118-7119, change from:

0445 "The following example causes subsequent calls to syslog() to accept
0446 error messages or messages generated by arbitrary processes, and to
0447 reject all other messages."

0448 to:

0449 "The following example causes subsequent calls to syslog() to accept
0450 error messages, and to reject all other messages."

0451 On Line 7122, change from:

0452 int mask = LOG_MASK (LOG_ERR | LOG_USER);

0453 to:

0454 int mask = LOG_MASK (LOG_ERR);

0455 **Change Number: XSH/TC1/D6/14** [XSH ERN 13]

0456 On Page: 259 Line: 8566,8590 Section: dlsym

0457 In the EXAMPLES section, change from:

0458 fptr = (int (*)(int))dlsym(handle, "my_function");

0459 to:

0460 *(void **)(&fptr) = dlsym(handle, "my_function");

0461 In the RATIONALE section on Page 260, Line 8590, change from:

0462 "None."

0463 to:

0464 "The C Standard does not require that pointers to functions can be
0465 cast back and forth to pointers to data. Indeed, the C Standard does
0466 not require that an object of type void* can hold a pointer to a
0467 function. Systems supporting the X/Open System Interfaces Extension,
0468 however, do require that an object of type void* can hold a pointer to
0469 a function. The result of converting a pointer to a function into a
0470 pointer to another data type (except void*) is still undefined, however.
0471 Note that compilers conforming to the C Standard are required to
0472 generate a warning if a conversion from a void* pointer to a function
0473 pointer is attempted as in:

0474   fptr = (int (*)(int))dlsym(handle, "my_function");

0475 Due to the problem noted here, a future revision may either add a new
0476 function to return function pointers, or the current interface may be
0477 deprecated in favor of two new functions, one that returns data
0478 pointers, and the other that returns function pointers."

0479 **Change Number: XSH/TC1/D6/15** [XSH ERN 14]

0480 On Page: 295 Line: 9573 Section: exec

0481 In the DESCRIPTION, add as a new paragraph before Line 9573
0482 (before "Directory streams open..."):

0483 "If file descriptors 0, 1, and 2 would otherwise be closed after a

```
0484   successful call to one of the exec family of functions, and the new
0485   process image file has the set-user-ID or set-group-ID file mode
0486   bits set, [XSI]and the ST_NOSUID bit is not set for the file system
0487   containing the new process image file,[/XSI] implementations may
0488   open an unspecified file for each of these file descriptors in the
0489   new process image."
```

```
0490   Add to the end of the APPLICATION USAGE section (Page 300) as a new
0491   paragraph:
```

```
0492   "Applications should not depend on file descriptors 0, 1, and 2 being
0493   closed when they are exec'd. A future revision may allow these file
0494   descriptors to be automatically opened for any process."
```

```
0495   Rationale: This addresses a security concern, where implementations
0496   may want to reopen file descriptors 0, 1, and 2 for setuid and setgid
0497   programs calling the exec family of functions.
```

```
0498   Change Number: XSH/TC1/D6/16 [XSHft2 ERN 2]
```

```
0499   On Page: 305  Line: 9975  Section: exit
```

```
0500   Change from:
```

```
0501   "and the low-order eight bits (that is, bits 0377) of status
0502   are made available to it."
```

```
0503   to:
```

```
0504   "and the low-order eight bits (that is, bits 0377) of status
0505   shall be made available to it."
```

```
0506   Change Number: XSH/TC1/D6/17 [XSHft4 ERN 2]
```

```
0507   On Page: 393  Line: 12700  Section: fork
```

```
0508   In the DESCRIPTION, add a new sentence after the THR shaded sentence
0509   that ends on Line 12700:
```

```
0510   "When the application calls fork from a signal handler and any of the
0511   fork handlers registered by pthread_atfork() calls a function that is
0512   not async-signal-safe, the behavior is undefined."
```

```
0513   Add a new paragraph in the RATIONALE section after Line 12807:
```

```
0514   "While the fork() function is async-signal-safe, there is no way for
0515   an implementation to determine whether the fork handlers established
0516   by pthread_atfork() are async-signal-safe. The fork handlers may
0517   attempt to execute portions of the implementation that are not
0518   async-signal-safe, such as those that are protected by mutexes,
0519   leading to a deadlock condition. It is therefore undefined for the
0520   fork handlers to execute functions that are not async-signal-safe
0521   when fork() is called from a signal handler."
```

```
0522   Change Number: XSH/TC1/D6/18 [XSH ERN 12]
```

```
0523   On Page: 397 Line: 12845-12851,12861-12865  Section: fpathconf
```

```
0524   In the DESCRIPTION, change the fourth paragraph from:
```

```
0525   "The name argument represents the variable to be queried relative to
0526   that file or directory. Implementations shall support all of the
0527   variables listed in the following table and may support others. The
0528   variables in the following table come from <limits.h> or <unistd.h>
0529   and the symbolic constants, defined in <unistd.h>, are the
```

0530   corresponding values used for name. Support for some pathname
0531   configuration variables is dependent on implementation options (see
0532   shading and margin codes in the table below). Where an implementation
0533   option is not supported, the variable need not be supported."

0534 to:

0535   "The name argument represents the variable to be queried relative to
0536   that file or directory. Implementations shall support all of the
0537   variables listed in the following table and may support others. The
0538   variables in the following table come from <limits.h> or <unistd.h>
0539   and the symbolic constants, defined in <unistd.h>, are the
0540   corresponding values used for name."

0541 On Lines 12861-12865, remove the margin markers and the shading in the
0542 table.

0543 Rationale: A corresponding change in Base Definitions now mandates these
0544 symbols.

0545 **Change Number: XSH/TC1/D6/19** [XSHft4 ERN 3]

0546 On Page: 424,425 Line: 13888,13930 Section: freeaddrinfo

0547 After the second paragraph in the DESCRIPTION (after Line 13888),
0548 add in smaller type:

0549   "Note: In many cases it is implemented by the Domain Name System,
0550   as documented in RFC 1034, RFC 1035, and RFC 1886."

0551 After the paragraph starting "If the AI_CANONNAME flag" on Page 425,
0552 Line 13930, add in smaller type:

0553   "Note: Since different implementations use different conceptual models,
0554   the terms "canonical name" and "alias" cannot be precisely defined
0555   for the general case. However, Domain Name System implementations
0556   are expected to interpret them as they are used in RFC 1034.

0557   Note: A numeric host address string is not a "name", and thus does
0558   not have a "canonical name" form; no address to hostname translation
0559   is performed. See below for handling of the case where a canonical
0560   name cannot be obtained."

0561 Add to the end of the APPLICATION USAGE section:

0562   "The term "canonical name" is misleading; it is taken from the
0563   Domain Name System (RFC 2181). It should be noted that the canonical
0564   name is a result of alias processing, and not necessarily a unique
0565   attribute of a host, address, or set of addresses. See RFC 2181 for
0566   more discussion of this in the Domain Name System context.

0567 Add RFC 2181 to the Informative References front-matter section.

0568 **Change Number: XSH/TC1/D6/20** [XSH ERN 17,18,19]

0569 On Page: 425 Line: 13921,13929,13943 Section: freeaddrinfo

0570 In the DESCRIPTION, on Line 13921, change from:

0571   "and AI_NUMERICSERV".

0572 to:

0573   "AI_NUMERICSERV, AI_V4MAPPED, AI_ALL, and AI_ADDRCONFIG".

0574 Append the following sentence at the end of Line 13929:

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```
0575    "The AI_PASSIVE flag shall be ignored if the nodename argument is
0576    not null."

0577  Insert the following text after Line 13943:

0578    "If the AI_ADDRCONFIG flag is specified, IPv4 addresses shall be
0579    returned only if an IPv4 address is configured on the local system,
0580    [IP6]and IPv6 addresses shall be returned only if an IPv6 address is
0581    configured on the local system.[/IP6]"

0582  Rationale: This is for alignment with the IETF IPv6 API specification.

0583  [Editorial Note: Items marked within square brackets are to be shaded
0584  and the margin mark noted added.]
```

0585 **Change Number: XSH/TC1/D6/21** [XSH ERN 20]

0586 On Page: 443   Line: 14579   Section: fsetpos()

0587 In the ERRORS section, delete the [EINVAL] error (Lines 14579-14580).

0588 Rationale: This is erroneous text referring to an unknown argument whence.

0589 **Change Number: XSH/TC1/D6/22** [XSH ERN 21]

0590 On Page: 481   Line: 15875-15883   Section: gai_strerror

0591 In the DESCRIPTION, add a new line "[EAI_OVERFLOW]" between Lines
0592 15880 and 15881.

0593 Rationale: [EAI_OVERFLOW] is missing from the list of known error codes.

0594 **Change Number: XSH/TC1/D6/23** [XSH ERN 22,23,24]

0595 On Page: 526   Line: 17267,17281-17282,17292-17293   Section: getnameinfo

0596 In the SYNOPSIS, change from:

```
0597    int getnameinfo(const struct sockaddr *restrict sa, socklen_t salen,
0598                    char *restrict node, socklen_t nodelen,
0599                    char *restrict service,
0600                    socklen_t servicelen, unsigned flags);
```

0601 to:

```
0602    int getnameinfo(const struct sockaddr *restrict sa, socklen_t salen,
0603                    char *restrict node, socklen_t nodelen,
0604                    char *restrict service,
0605                    socklen_t servicelen, int flags);
```

0606 In the DESCRIPTION, Lines 17281-17282, change from:

```
0607    "If the node's name cannot be located, the numeric form of the node's
0608    address is returned instead of its name."
```

0609 to:

```
0610    "If the node's name cannot be located, the numeric form of the address
0611    contained in the socket address structure pointed to by the sa
0612    argument is returned instead of its name."
```

0613 On Lines 17292-17293, change from:

```
0614    "If the flag bit NI_NUMERICHOST is set, the numeric form of the host's
0615    address shall be returned instead of its name, under all circumstances."
```

0616 to:

0617   "If the flag bit NI_NUMERICHOST is set, the numeric form of the address
0618   contained in the socket address structure pointed to by the sa
0619   argument shall be returned instead of its name, under all circumstances."

0620 Insert the following text between Lines 17297 and 17298, as a
0621 new bullet list item:

0622   "If the flag bit NI_NUMERICSCOPE is set, the numeric form of the scope
0623   identifier shall be returned (for example, interface index) instead
0624   of its name. This flag shall be ignored if the sa argument is not an
0625   IPv6 address."

0626 Rationale: IETF IPv6 API specification alignment.

0627 **Change Number: XSH/TC1/D6/24** [XSH ERN 25]

0628 On Page: 527 Line: 17312-17324 Section: getnameinfo

0629 In the ERRORS section, add the following between Lines 17323 and 17324:

0630   "[EAI_OVERFLOW] An argument buffer overflowed. The buffer pointed to
0631   by the node argument or the service argument was
0632   too small."

0633 **Change Number: XSH/TC1/D6/25** [XSH ERN 26]

0634 On Page: 551 Line: 18090 Section: getrlimit

0635 In the DESCRIPTION, change from:

0636   "If this limit is exceeded, functions that allocate new file
0637   descriptors may fail with errno set to [EMFILE]."

0638 to:

0639   "If this limit is exceeded, functions that allocate a file descriptor
0640   shall fail with errno set to [EMFILE]."

0641 Add to the end of the APPLICATION USAGE section:

0642   "If a process attempts to set the hard limit or soft limit for
0643   RLIMIT_NOFILE to less than the highest currently open file
0644   descriptor+1, unexpected behavior may occur."

0645 **Change Number: XSH/TC1/D6/26** [XSH ERN 59]

0646 On Page: 563 Line: 18449 Section: getsubopt

0647 In the SYNOPSIS, change "tokens" to "keylistp" on Line 18449.

0648 **Change Number: XSH/TC1/D6/27** [XSH ERN 27,28]

0649 On Page: 577 Line: 18969 Section: gmtime

0650 In the RETURN VALUE section, change from:

0651   "The gmtime() function shall return a pointer to a struct tm."

0652 to:

0653   "Upon successful completion, the gmtime() function shall return a
0654   pointer to a struct tm. If an error is detected, gmtime() shall return
0655   a null pointer [CX] and set errno to indicate the error[/CX]."

0656 Add to the ERRORS section(Shaded and marked with the CX margin code):

0657   "The gmtime() function shall fail if:

0658   [EOVERFLOW] The result cannot be represented."

0659 On Page 577, Line 18971, in the RETURN VALUE section, remove the text:

0660   "or UTC is not available,"

0661 **Change Number: XSH/TC1/D6/28** [XSH ERN 29]

0662 On Page: 593 Line: 19466 Section: if_indextoname

0663 In the DESCRIPTION, change from:

0664   "a buffer of at least {IFNAMSIZ} bytes."

0665 to:

0666   "a buffer of at least {IF_NAMESIZE} bytes."

0667 **Change Number: XSH/TC1/D6/29** [XSH ERN 30]

0668 On Page: 603 Line: 19754-19755 Section: inet_ntop

0669 Change from:

0670   "The src argument points to a buffer holding an IPv4 address
0671   if the af argument is AF_INET, [IP6]or an IPv6 address if the af
0672   argument is AF_INET6[/IP6]."

0673 to:

0674   "The src argument points to a buffer holding an IPv4 address
0675   if the af argument is AF_INET, [IP6]or an IPv6 address if the af
0676   argument is AF_INET6[/IP6]; the address must be in network byte order."

0677 [Editorial Note: Items marked within square brackets are to be shaded
0678 and the margin mark noted added.]

0679 **Change Number: XSH/TC1/D6/30** [XSH ERN 31]

0680 On Page: 606 Line: 19870 Section: initstate()

0681 In the APPLICATION USAGE section, change from:

0682   "Threaded applications should use rand_r(), erand48(), ..."

0683 to:

0684   "Threaded applications should use erand48(), ..."

0685 **Change Number: XSH/TC1/D6/31** [XSH ERN 33,34]

0686 On Page: 695 Line: 22885,22892,22888-22897 Section: localeconv

0687 In the DESCRIPTION, on Lines 22885 and 22892, delete "or int_curr_symbol".

0688 Replace Lines 22888-22890 with the following:

0689   "Set to a value indicating the separation of the currency_symbol,
0690   the sign string, and the value for a non-negative formatted
0691   monetary quantity."

0692 Replace Lines 22895-22897 with the following:

0693   "Set to a value indicating the separation of the currency_symbol,
0694   the sign string, and the value for a negative formatted monetary
0695   quantity."

0696 Rationale: ISO C alignment.

0697 **Change Number: XSH/TC1/D6/32** [XSH ERN 35]

0698 On Page: 699 Line: 23037 Section: localtime

0699 In the RETURN VALUE section, change from:

0700   "The localtime() function shall return a pointer to the broken
0701   down time structure."

0702 to:

0703   "Upon successful completion, the localtime() function shall return a
0704   pointer to the broken down time structure. If an error is detected,
0705   localtime() shall return a null pointer [CX] and set errno to indicate
0706   the error [/CX]."

0707 Add to the ERRORS section (shaded and with a CX margin code):

0708   "The localtime() function shall fail if:

0709   [EOVERFLOW] The result cannot be represented."

0710 **Change Number: XSH/TC1/D6/33** [XSHft4 ERN 4]

0711 On Page: 729 Line: 23942 Section: makecontext

0712 In the DESCRIPTION, change from:

0713   "The application shall ensure that the value of argc matches the
0714   number of integer arguments passed to func; otherwise, the
0715   behavior is undefined."

0716 to:

0717   "The application shall ensure that the value of argc matches the
0718   number of arguments of type int passed to func; otherwise, the
0719   behavior is undefined."

0720 **Change Number: XSH/TC1/D6/34** [XSH ERN 36]

0721 On Page: 771 Line: 25175 Section: mmap()

0722 In the SYNOPSIS, change the margin code from:

0723   MF|SHM

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0724 to:

0725   MF│SHM│TYM

0726 **Change Number: XSH/TC1/D6/35** [XSH ERN 37]

0727 On Page: 778 Line: 25505 Section: modf()

0728 In the APPLICATION USAGE section, change from:

0729   a = modf(x, &iptr);
0730   x == a+*iptr;

0731 to:

0732   a = modf(x, iptr);
0733   x == a+*iptr;

0734 [Editorial Note: The missing & in the first line.]

0735 **Change Number: XSH/TC1/D6/36** [XSH ERN 38]

0736 On Page: 817 Line: 26583 Section: munmap()

0737 In the SYNOPSIS, change the margin codes from:

0738   MF│SHM

0739 to:

0740   MF│SHM│TYM

0741 **Change Number: XSH/TC1/D6/37** [XSHft3 ERN 2]

0742 On Page: 821 Line: 26736 Section: nanosleep

0743 In the SEE ALSO section, change from:

0744   "sleep(), ..."

0745 to:

0746   "clock_nanosleep(), sleep(), ..."

0747 **Change Number: XSH/TC1/D6/38** [XSH ERN 39]

0748 On Page: 923 Line: 29616 Section: posix_trace_attr_setlogfullpolicy()

0749 In the SYNOPSIS, add the TRL and TRC margin codes to the
0750 posix_trace_attr_setlogfullpolicy() function.

0751 **Change Number: XSH/TC1/D6/39** [XSH ERN 40]

0752 On Page: 926 Line: 29648 Section: posix_trace_setstreamfullpolicy()

0753 In the SYNOPSIS, change from:

0754   posix_trace_setlogfullpolicy()

0755 to:

0756   posix_trace_setstreamfullpolicy()

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0757 **Change Number: XSH/TC1/D6/40** [XSH ERN 41]

0758 On Page: 944   Line: 30224   Section: posix_trace_flush() (pointer page)

0759 In the SYNOPSIS, add the missing TRL option code on Line 30226.

0760 **Change Number: XSH/TC1/D6/41** [XSH ERN 42]

0761 On Page: 953   Line: 30466   Section: posix_trace_open() (pointer page)

0762 In the SYNOPSIS, change the TCT margin code to the TRC margin code.

0763 **Change Number: XSH/TC1/D6/42** [XSHft4 ERN 5]

0764 On Page: 966   Line: 30749   Section: pow()

0765 In the RETURN VALUE section, change from:

0766   "If the correct value would cause overflow, a range error shall occur
0767   and pow(), powf(), and powl() shall return HUGE_VAL, HUGE_VALF,
0768   and HUGE_VALL, respectively."

0769 to:

0770   "If the correct value would cause overflow, a range error shall occur
0771   and pow(), powf(), and powl() shall return +/-HUGE_VAL, +/-HUGE_VALF,
0772   and +/-HUGE_VALL, respectively with the same sign as the correct value
0773   of the function."

0774 **Change Number: XSH/TC1/D6/43** [XSH ERN 43]

0775 On Page: 997   Line: 31631   Section: pthread_attr_getstacksize()

0776 In the SYNOPSIS, change the TSA margin code to the TSS margin code.

0777 In the CHANGE HISTORY section, on Line 31666, change from:

0778   "Thread Stack Address Attribute option"

0779 to:

0780   "Thread Stack Size Attribute option"

0781 **Change Number: XSH/TC1/D6/44** [XSH ERN 54]

0782 On Page: 1046   Line: 32852   Section: pthread_create()

0783 Add after Line 32852, with the text shaded and marked with the
0784 XSI margin code:

0785   "The alternate stack shall not be inherited."

0786 **Change Number: XSH/TC1/D6/45** [XSH ERN 45]

0787 On Page: 1108   Line: 34732   Section: pthread_rwlock_destroy()

0788 Add to the APPLICATION USAGE section:

0789   "Applications using these and related read-write lock functions may be
0790   subject to priority inversion, as discussed in the Base Definitions
0791   volume of IEEE Std 1003.1-2001, Section 3.285, Priority Inversion."

0792 **Change Number: XSH/TC1/D6/46** [XSH ERN 46]

0793 On Page: 1125 Line: 35199 Section: pthread_rwlockattr_init()

0794 (pointer page)
0795 In the SYNOPSIS, change the XSI margin code to the THR margin code.

0796 **Change Number: XSH/TC1/D6/47** [XSH ERN 47]

0797 On Page: 1126 Line: 35208 Section: pthread_rwlockattr_setpshared()

0798 (pointer page)
0799 In the SYNOPSIS, change the XSI margin code to the THR margin code.

0800 **Change Number: XSH/TC1/D6/48** [XSHft2 ERN 3,4, XBD ERN 15]

0801 On Page: 1148 Line: 35727,35731,35751 Section: putenv()

0802 Change Line 35727 from:

0803   "The string argument should point to a string of the form "name=value."

0804 to:

0805   "The string argument should point to a string of the form "name=value"."

0806 Rationale: A closing double quote was missing.

0807 Change Line 35730 from:

0808   "The space used by string is no longer used once a new string-defining
0809   name is passed to putenv()."

0810 to:

0811   "The space used by string is no longer used once a new string
0812   which defines name is passed to putenv()."

0813 In the APPLICATION USAGE section, add a new paragraph after Line 35751:

0814   "See exec for restrictions on changing the environment
0815   in multi-threaded applications."

0816 **Change Number: XSH/TC1/D6/49** [XSH ERN 48]

0817 On Page: 1160 Line: 36046 Section: qsort()

0818 In the DESCRIPTION, add at the end of Line 36047:

0819   "If the nel argument has the value zero, the comparison function
0820   pointed to by compar shall not be called and no rearrangement shall
0821   take place."

0822 Add at Line 36048 the new paragraphs:

0823   "The application shall ensure that the comparison function pointed to
0824   by compar does not alter the contents of the array. The implementation
0825   may reorder elements of the array between calls to the comparison
0826   function, but shall not alter the contents of any individual element.

0827   When the same objects (consisting of width bytes, irrespective of
0828   their current positions in the array) are passed more than once to the
0829   comparison function, the results shall be consistent with one another.
0830   That is, they shall define a total ordering on the array."

0831 Replace Line 36064 with:

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```
0832    "The requirement that each argument (hereafter referred to as p) to
0833    the comparison function is a pointer to elements of the array implies
0834    that for every call, for each argument separately, all of the
0835    following expressions are nonzero:

0836        ((char *)p - (char *)base) % width == 0
0837        (char *)p >= (char *)base
0838        (char *)p < (char *)base + nel * width"
```

0839   **Change Number: XSH/TC1/D6/50** [XSHft2 ERN 5]

0840   On Page: 1175   Line: 36568   Section: readdir()

0841   Replace the EXAMPLES section with:

0842   "The following sample program searches the current directory for
0843   each of the arguments supplied on the command line:

```
0844        #include <dirent.h>
0845        #include <errno.h>
0846        #include <stdio.h>
0847        #include <string.h>

0848        static void lookup(const char *arg)
0849        {
0850            DIR *dirp;
0851            struct dirent *dp;

0852            if ((dirp = opendir(".")) == NULL) {
0853                perror("couldn't open '.'");
0854                return;
0855            }

0856            do {
0857                errno = 0;
0858                if ((dp = readdir(dirp)) != NULL) {
0859                    if (strcmp(dp->d_name, arg) != 0)
0860                        continue;

0861                    (void) printf("found %s\n", arg);
0862                    (void) closedir(dirp);
0863                    return;
0864                }
0865            } while (dp != NULL);

0866            if (errno != 0)
0867                perror("error reading directory");
0868            else
0869                (void) printf("failed to find %s\n", arg);
0870            (void) closedir(dirp);
0871            return;
0872        }

0873        int main(int argc, char *argv[])
0874        {
0875            int i;
0876            for (i = 1; i < argc; i++)
0877                lookup(argv[i]);
0878            return (0);
0879        }
0880    "
```

0881 **Change Number: XSH/TC1/D6/51** [XSH ERN 49]

0882 On Page: 1185   Line: 36852   Section: realpath()

0883 In the DESCRIPTION, add as a new paragraph:

0884   "If resolved_name is a null pointer, the behavior of realpath() is
0885   implementation-defined."

0886 In the ERRORS section, Line 36860, change from:

0887   "[EINVAL]   Either the file_name or resolved_name is a null pointer."

0888 to:

0889   "[EINVAL]   The file_name argument is a null pointer".

0890 Add to the RATIONALE, Line 36890:

0891   "Since the maximum pathname length is arbitrary unless {PATH_MAX} is
0892   defined, an application generally cannot supply a resolved_name buffer
0893   with size {{PATH_MAX}+1}."

0894 Add to the FUTURE DIRECTIONS section, Line 36892:

0895   "In the future, passing a null pointer to realpath() for the
0896   resolved_name argument may be defined to have realpath() allocate
0897   space for the generated pathname."

0898 **Change Number: XSH/TC1/D6/52** [XSH ERN 50]

0899 On Page: 1228   Line: 38226   Section: sched_get_priority_max()

0900 In the SYNOPSIS, change the PS margin code to PS|TPS.

0901 **Change Number: XSH/TC1/D6/53** [XSH ERN 51]

0902 On Page: 1231   Line: 38343   Section: sched_rr_get_interval()

0903 In the SYNOPSIS, change the PS margin code to PS|TPS.

0904 **Change Number: XSH/TC1/D6/54** [XSHft4 ERN 6]

0905 On Page: 1245   Line: 38757   Section: sem_getvalue()

0906 In the DESCRIPTION, change from:

0907   "If sem is locked, then the value returned by sem_getvalue() is either
0908   zero or a negative."

0909 to:

0910   "If sem is locked, then the object to which sval points
0911   shall either be set to zero or to a negative."

0912 **Change Number: XSH/TC1/D6/55** [XBD ERN 15]

0913 On Page: 1282,1283 Line: 39975,39997 Section: setenv()

0914 In the APPLICATION USAGE section, add the following text on Line 39975:

0915   "See exec for restrictions on changing the environment
0916   in multi-threaded applications."

0917 Add to the SEE ALSO section on Page 1283, Line 39997:

0918   "exec"

0919 **Change Number: XSH/TC1/D6/56** [XSH ERN 52]

0920 On Page: 1299 Line: 40351 Section: setpgid()

0921 In the DESCRIPTION, change from:

0922   "Also, if pgid is 0, the process group ID of the indicated process
0923   shall be used."

0924 to:

0925   "Also, if pgid is 0, the process ID of the indicated process shall
0926   be used."

0927 Rationale: Revert to IEEE Std POSIX.1-1996 wording; it appeared to be
0928 an unintended change.

0929 **Change Number: XSH/TC1/D6/57** [XBDft3 ERN 2]

0930 On Page: 1338 Line: 41433 Section: sigaction()

0931 In the DESCRIPTION, in the table on Line 41433, change the first
0932 entry from:

0933   "SIG_DFL, SIG_IGN, or pointer to a function".

0934 to:

0935   "Pointer to a signal-catching function or one of the macros
0936   SIG_IGN or SIG_DFL."

0937 Change the Description field in the last entry in the table from:

0938   "Signal catching function."

0939 to:

0940   "Pointer to a signal-catching function."

0941 **Change Number: XSH/TC1/D6/58** [XSH ERN 54]

0942 On Page: 1345 Line: 41734 Section: sigaltstack()

0943 Change the first sentence on Line 41734 from:

0944   "The sigaltstack() function allows a process to define and examine
0945   the state of an alternate stack for signal handlers."

0946 to:

0947   "The sigaltstack() function allows a process to define and examine
0948   the state of an alternate stack for signal handlers for the current
0949   thread."

0950 **Change Number: XSH/TC1/D6/59** [XSH ERN 55]

0951 On Page: 1353 Line: 42015 Section: siginterrupt()

0952 In the DESCRIPTION, change from:

0953   siginterrupt(int sig, int flag) {

0954 to:

0955   int siginterrupt(int sig, int flag) {

0956 **Change Number: XSH/TC1/D6/60** [XSH ERN 56]

0957 On Page: 1424 Line: 44059 Section: strftime()

0958 Add the following text, shaded and marked with the CX margin after
0959 Line 44059:

0960   "If a struct tm broken-down time structure is created by localtime()
0961   or localtime_r(), or modified by mktime(), and the value of TZ is
0962   subsequently modified, the results of the %Z and %z strftime()
0963   conversion specifiers are undefined, when strftime() is called with
0964   such a broken-down time structure.

0965   If a struct tm broken-down time structure is created or modified
0966   by gmtime() or gmtime_r(), it is unspecified whether the result of the
0967   %Z and %z conversion specifiers shall refer to UTC or the current
0968   local time zone, when strftime() is called with such a broken-down
0969   time structure."

0970 **Change Number: XSH/TC1/D6/61** [XSHft ERN 7]

0971 On Page: 1442 Line: 44661-44663 Section: strtod()

0972 In the RETURN VALUE section, change from:

0973   "If the correct value is outside the range of representable values,
0974   HUGE_VAL, HUGE_VALF, or HUGE_VALL shall be returned (according to
0975   the sign of the value), and errno shall be set to [ERANGE]."

0976 to:

0977   "If the correct value is outside the range of representable values,
0978   +/-HUGE_VAL, +/-HUGE_VALF, or +/-HUGE_VALL shall be returned
0979   (according to the sign of the value), and errno shall be set to
0980   [ERANGE]."

0981 Rationale: The sign of the return value was previously unclear.

0982 **Change Number: XSH/TC1/D6/62** [XSH ERN 12]

0983 On Page: 1466-1469 Line: 45296-45305,45307-45434 Section: sysconf()

0984 In the DESCRIPTION, change the first paragraph from:

0985   "The sysconf() function provides a method for the application
0986   to determine the current value of a configurable system limit or
0987   option (variable). Support for some system variables is dependent
0988   on implementation options (as indicated by the margin codes in the
0989   following table). Where an implementation option is not supported,
0990   the variable need not be supported."

0991 to:

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0992   "The sysconf() function provides a method for the application to
0993   determine the current value of a configurable system limit or option
0994   (variable). The implementation shall support all of the variables listed
0995   in the following table and may support others."

0996 In the second paragraph, delete the text on Line 45303:

0997   "Support for some configuration variables is dependent on implementation
0998   options (see shading and margin codes in the table below). Where an
0999   implementation option is not supported, the variable need not be
1000   supported."

1001 Remove the shading and margin markers on Lines 45307-45434 (the table).

1002 Add the following entries to the table in alphabetical order:

1003   _POSIX2_PBS_CHECKPOINT   _SC_2_PBS_CHECKPOINT
1004   _POSIX_IPV6   _SC_IPV6
1005   _POSIX_RAW_SOCKETS   _SC_RAW_SOCKETS
1006   _POSIX_SYMLOOP_MAX   _SC_SYMLOOP_MAX
1007   _XOPEN_STREAMS   _SC_XOPEN_STREAMS

1008 Rationale: A corresponding change in Base Definitions means that all
1009 the _PC* and _SC* symbols are now required to be supported. The deletion
1010 in paragraph two removes some duplicated text. The additions add some
1011 symbols drawn from the standard that were omitted from this reference
1012 page.

1013 **Change Number: XSH/TC1/D6/63** [XSH ERN 57]

1014 On Page: 1469 Line: 45441 Section: sysconf()

1015 In the RETURN VALUE section, change from:

1016   "The value shall not change during the lifetime of the calling process."

1017 to:

1018   "The value shall not change during the lifetime of the calling process,
1019   [XSI]except that sysconf(_SC_OPEN_MAX) may return different values
1020   before and after a call to setrlimit() which changes the RLIMIT_NOFILE
1021   soft limit[/XSI]".

1022 [Editorial Note: The new text is shaded and marked with the XSI margin
1023 code.]

1024 **Change Number: XSH/TC1/D6/64** [XSHft4 ERN 8]

1025 On Page: 1478 Line: 45779-45780 Section: tan()

1026 In the RETURN VALUE section, change from:

1027   "If the correct value would cause overflow, a range error shall occur
1028   and tan(), tanf(), and tanl() shall return the value of the macro
1029   HUGE_VAL, HUGE_VALF, and HUGE_VALL, respectively.

1030 to:

1031   "If the correct value would cause overflow, a range error shall occur
1032   and tan(), tanf(), and tanl() shall return +/-HUGE_VAL, +/-HUGE_VALF,
1033   and +/-HUGE_VALL, respectively with the same sign as the correct value
1034   of the function."

1035 Rationale: The sign of the return value was previously unclear.

1036 **Change Number: XSH/TC1/D6/65** [XSHft4 ERN 9]

1037 On Page: 1509 Line: 46605-46607 Section: tgamma()

1038 In the RETURN VALUE section, change from:

1039   "If the correct value would cause overflow, a range error shall occur
1040   and tgamma(), tgammaf(), and tgammal() shall return HUGE_VAL, HUGE_VALF,
1041   and HUGE_VALL, respectively."

1042 to:

1043   "If the correct value would cause overflow, a range error shall occur
1044   and tgamma(), tgammaf(), and tgammal()shall return +/-HUGE_VAL,
1045   +/-HUGE_VALF, and +/-HUGE_VALL, respectively with the same sign as the
1046   correct value of the function."

1047 **Change Number: XSH/TC1/D6/66** [XSHft4 ERN 10]

1048 On Page: 1612 Line: 49660-49662 Section: wcstod()

1049 In the RETURN VALUE section, change from:

1050   "If the correct value is outside the range of representable values,
1051   HUGE_VAL, HUGE_VALF, or HUGE_VALL shall be returned (according to
1052   the sign of the value), and errno shall be set to [ERANGE]."

1053 to:

1054   "If the correct value is outside the range of representable values,
1055   +/-HUGE_VAL, +/-HUGE_VALF, or +/-HUGE_VALL shall be returned
1056   (according to the sign of the value), and errno shall be set to
1057   [ERANGE]."

1058 Rationale: The sign of the return value was previously unclear.

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4. Changes to Shell and Utilities

This section contains the set of changes to the original text of the Shell and Utilities.

1059 **Change Number: XCU/TC1/D6/1** [XBDtc1d2 ERN 1]

1060 On Page: 16 Line: 630 Section: 1.8.1

1061 In Codes, change from:

1062   "Thread Stack Address Size"

1063 to:

1064   "Thread Stack Size Attribute"

1065 **Change Number: XCU/TC1/D6/2** [XCU ERN 9]

1066 On Page: 17 Line: 693-696 Section: Table 1-3

1067 In Utility Limit Minimum Values, delete Lines 693-696 (the table
1068 entry for POSIX2_VERSION).

1069 Rationale: _POSIX2_VERSION is not a Utility Limit Minimum Value.

1070 **Change Number: XCU/TC1/D6/3** [XCU ERN 9]

1071 On Page: 18 Line: 700-703 Section: 1.9

1072 In Utility Limits, change from:

1073   "utility (see getconf (on page 481)) and through the sysconf() function
1074   defined in the System Interfaces volume of IEEE Std 1003.1-2001. The
1075   literal names shown in Table 1-3 (on page 17) apply only to the
1076   getconf utility; the high-level language binding describes the exact
1077   form of each name to be used by the interfaces in that binding."

1078 to:

1079   "utility (see getconf (on page 481))."

1080 **Change Number: XCU/TC1/D6/4** [XCUft4 ERN 1]

1081 On Page: 40 Line: 1676-1678 Section: 2.6.3

1082 In Command Substitution, change from:

1083   "If a command substitution occurs inside double-quotes, it shall not be
1084   performed on the results of the substitution."

1085 to:

1086   "If a command substitution occurs inside double-quotes, field splitting
1087   and pathname expansion shall not be performed on the results of the
1088   substitution."

1089 Rationale: The replacement text taken from POSIX.2-1992 is clearer
1090 about the items that are not performed.

1091 **Change Number: XCU/TC1/D6/5** [XCU ERN 1]

1092 On Page: 65-99 Line: 2678-3740 Section: Special Built-In Utilities

1093 In the OPTIONS sections of the following utilities:

1094 export on Page 79, Line 3078
1095 readonly on Page 81, Line 3152
1096 set on Page 87, Line 3368
1097 unset on Page 98, Line 3728

1098 Change from:

1099   "None."

1100 to:

1101   "See the DESCRIPTION."

1102 In the OPERANDS sections of the following utilities:

1103 break on Page 65, Line 2668
1104 colon on Page 67, Line 2727
1105 continue on Page 69, Line 2785
1106 dot on Page 71, Line 2839
1107 eval on Page 73, Line 2891
1108 exec on Page 75, Line 2950
1109 exit on Page 77, Line 3011
1110 export on Page 79, Line 3080
1111 readonly on Page 81, Line 3154
1112 return on Page 83, Line 3207
1113 set on Page 87, Line 3370
1114 shift on Page 91, Line 3504
1115 trap on Page 96, Line 3644
1116 unset on Page 98, Line 3730

1117 Change from:

1118   "None."

1119 to:

1120   "See the DESCRIPTION."

1121 In the STDIN sections of the following utilities:

1122 break on Page 65, Line 2670
1123 colon on Page 67, Line 2729
1124 continue on Page 69, Line 2787
1125 dot on Page 71, Line 2841
1126 eval on Page 73, Line 2893
1127 exec on Page 75, Line 2952
1128 exit on Page 77, Line 3013
1129 export on Page 79, Line 3082
1130 readonly on Page 81, Line 3156
1131 return on Page 83, Line 3209
1132 set on Page 87, Line 3372
1133 shift on Page 91, Line 3506
1134 times on Page 93, Line 3560
1135 trap on Page 96, Line 3646
1136 unset on Page 98, Line 3732

1137 Change from:

1138   "None."

1139 to:

1140   "Not used."

30   IEEE Std 1003.1-2001/Cor 1-2002 — Copyright © 2001-2003, IEEE and The Open Group. All rights reserved.

1141 In the INPUT FILES section of dot on Page 71, Line 2843, change from:

1142   "None."

1143 to:

1144   "See the DESCRIPTION."

1145 In the ENVIRONMENT VARIABLES section of dot on Page 71, Line 2845,
1146 change from:

1147   "None."

1148 to:

1149   "See the DESCRIPTION."

1150 In the ASYNCHRONOUS EVENTS sections of the following utilities:

1151 break on Page 65, Line 2676
1152 colon on Page 67, Line 2735
1153 continue on Page 69, Line 2793
1154 dot on Page 71, Line 2847
1155 eval on Page 73, Line 2899
1156 exec on Page 75, Line 2958
1157 exit on Page 77, Line 3019
1158 export on Page 79, Line 3088
1159 readonly on Page 81, Line 3162
1160 return on Page 83, Line 3215
1161 set on Page 88, Line 3378
1162 shift on Page 91, Line 3512
1163 times on Page 93, Line 3566
1164 trap on Page 96, Line 3652
1165 unset on Page 98, Line 3738

1166 Change from:

1167   "None."

1168 to:

1169   "Default."

1170 In the STDOUT sections of the following utilities:

1171 break on Page 65, Line 2678
1172 colon on Page 67, Line 2737
1173 continue on Page 69, Line 2795
1174 dot on Page 71, Line 2849
1175 eval on Page 73, Line 2901
1176 exec on Page 75, Line 2960
1177 exit on Page 77, Line 3021
1178 return on Page 83, Line 3217
1179 shift on Page 91, Line 3514
1180 unset on Page 98, Line 3738

1181 Change from:

1182   "None."

1183 to:

1184   "Not used."

1185 In the STDOUT sections of the following utilities:

1186 export on Page 79, Line 3090
1187 readonly on Page 81, Line 3164
1188 set on Page 88, Line 3380
1189 times on Page 93, Line 3568
1190 trap on Page 96, Line 3654

1191 Change from:

1192   "None."

1193 to:

1194   "See the DESCRIPTION."

1195 In the STDERR sections of the following utilities:

1196 break on Page 65, Line 2680
1197 colon on Page 67, Line 2739
1198 continue on Page 69, Line 2797
1199 eval on Page 73, Line 2903
1200 exec on Page 75, Line 2962
1201 exit on Page 77, Line 3023
1202 export on Page 79, Line 3092
1203 readonly on Page 82, Line 3166
1204 return on Page 83, Line 3219
1205 set on Page 88, Line 3382
1206 shift on Page 91, Line 3516
1207 times on Page 93, Line 3570
1208 trap on Page 96, Line 3656
1209 unset on Page 98, Line 3742

1210 Change from:

1211   "None."

1212 to:

1213   "The standard error shall be used only for diagnostic messages."

1214 In the CONSEQUENCES OF ERRORS sections of the following utilities:

1215 break on Page 65, Line 2689
1216 colon on Page 67, Line 2747
1217 continue on Page 69, Line 2806
1218 dot on Page 71, Line 2859
1219 eval on Page 73, Line 2913
1220 exec on Page 76, Line 2974
1221 exit on Page 77, Line 3034
1222 export on Page 80, Line 3100
1223 readonly on Page 82, Line 3174
1224 return on Page 83, Line 3230
1225 set on Page 88, Line 3390
1226 shift on Page 91, Line 3524
1227 times on Page 93, Line 3578
1228 trap on Page 96, Line 3666
1229 unset on Page 99, Line 3751

1230 Change from:

1231   "None."

1232 to:

1233   "Default."

1234 Rationale: Many changes to use terms as described in the Utility
1235 Description Defaults. No change in behavior is intended.

1236 **Change Number: XCU/TC1/D6/6** [XCUft2 ERN 1]

1237 On Page: 79 Line: 3061 Section: export

1238 In the DESCRIPTION, add to the end of the first paragraph:

1239 "If the name of a variable is followed by =word, then the value of that
1240 variable shall be set to word."

1241 Rationale: The SYNOPSIS for export includes export name[=word]...
1242 but the meaning of the optional "=word" is never explained in the text.

1243 [Editorial Note: The term "word" is in italics.]

1244 **Change Number: XCU/TC1/D6/7** [XCUft2 ERN 1]

1245 On Page: 81 Line: 3135 Section: readonly

1246 In the DESCRIPTION, add to the end of the first paragraph:

1247 "If the name of a variable is followed by =word, then the value of that
1248 variable shall be set to word."

1249 Rationale: The SYNOPSIS for readonly includes readonly name[=word]...
1250 but the meaning of the optional "=word" is never explained in the text.

1251 [Editorial Note: The term "word" is in italics.]

1252 **Change Number: XCU/TC1/D6/8** [XCUft2 ERN 2]

1253 On Page: 90 Line: 3467 Section: set

1254 In the RATIONALE section, change the square brackets on Line 3467:

1255 notify [%job ...]

1256 to be in bold; that is, the typeface used for "Optional Items
1257 in Utility Syntax".

1258 Rationale: The square brackets are supposed to denote an optional
1259 argument in this example.

1260 **Change Number: XCU/TC1/D6/9** [XCUft2 ERN 3]

1261 On Page: 93 Line: 3545-3546 Section: times

1262 In the DESCRIPTION, change from:

1263 "Write the accumulated user and system times for the shell and for all
1264 of its child processes ..."

1265 to:

1266 "The times utility shall write the accumulated user and system times
1267 for the shell and for all of its child processes ..."

1268 **Change Number: XCU/TC1/D6/10** [XCUft2 ERN 4]

1269 On Page: 134 Line: 5023,5028 Section: ar

1270 In the SYNOPSIS, change Line 5023 from:

1271 ar -m[-abiv][posname] archive file ...

1272 to:

1273   ar -m [-v] archive file ...
1274   ar -m -a [-v] posname archive file ...
1275   ar -m -b [-v] posname archive file ...
1276   ar -m -i [-v] posname archive file ...

1277 Change Line 5028 from:

1278   ar -r[-cuv][-abi][posname]archive file ...

1279 to:

1280   ar -r [-cuv] archive file ...
1281   [XSI] ar -r -a [-cuv] posname archive file ...
1282   ar -r -b [-cuv] posname archive file ...
1283   ar -r -i [-cuv] posname archive file ...[/XSI]

1284 Rationale: The -a, -b, and -i options are mutually-exclusive, and
1285 posname is required if any of these options is specified.

1286 **Change Number: XCU/TC1/D6/11** [XCUft3 ERN 1]

1287 On Page: 139 Line: 5246 Section: ar

1288 In the RATIONALE section, change from:

1289   "The two-byte trailer is the string "<newline>"."

1290 to:

1291   "The two-byte trailer is the string "`<newline>"."

1292 Rationale: The description of the 4.4BSD archive format states
1293 incorrectly that each header ends with the two-byte trailer "<newline>".
1294 This is incorrect; the trailer is a backquote followed by a <newline>
1295 as per IEEE Std 1003.2-1992.

1296 **Change Number: XCU/TC1/D6/12** [XCUft2 ERN 5]

1297 On Page: 214 Line: 8324-8339 Section: c99

1298 In the EXTENDED DESCRIPTION, Page 214, Lines 8324-8332, change from:

1299   -l c   This operand shall make visible all functions referenced in
1300   the System Interfaces volume of IEEE Std 1003.1-2001, with
1301   the possible exception of those functions listed as residing
1302   in <aio.h>, <arpa/inet.h>, <math.h>, <mqueue.h>, <netdb.h>,
1303   <netinet/in.h>, <pthread.h>, <sched.h>, <semaphore.h>, <spawn.h>,
1304   <sys/socket.h>, pthread_kill(), and pthread_sigmask() in
1305   <signal.h>, <trace.h>, functions marked as extensions other than
1306   as part of the MF or MPR extensions in <sys/mman.h>, functions
1307   marked as ADV in <fcntl.h>, and functions marked as CS, CPT,
1308   and TMR in <time.h>. This operand shall not be required to be
1309   present to cause a search of this library.

1310 to:

1311   -l c   This operand shall make visible all functions referenced in
1312   the System Interfaces volume of IEEE Std 1003.1-2001, with
1313   the possible exception of those functions listed as residing
1314   in <aio.h>, <arpa/inet.h>, <complex.h>, <fenv.h>, <math.h>,
1315   <mqueue.h>, <netdb.h>, <netinet/in.h>, <pthread.h>, <sched.h>,
1316   <semaphore.h>, <spawn.h>, <sys/socket.h>, pthread_kill(), and
1317   pthread_sigmask() in <signal.h>, <trace.h>, functions marked
1318   as extensions other than as part of the MF or MPR extensions in
1319   <sys/mman.h>, functions marked as ADV in <fcntl.h>, and functions
1320   marked as CS, CPT, and TMR in <time.h>. This operand shall not
1321   be required to be present to cause a search of this library.

1322   In the EXTENDED DESCRIPTION on Page 214, Lines 8338-8339, change from:

1323   -l m   This operand shall make visible all functions referenced in
1324   <math.h>. An implementation may search this library in the
1325   absence of this operand.

1326   to:

1327   -l m   This operand shall make visible all functions referenced in
1328   <math.h>, <complex.h>, and <fenv.h>. An implementation may
1329   search this library in the absence of this operand.

1330   Rationale: Integration of ISO C99 math headers.

1331   **Change Number: XCU/TC1/D6/13** [XCU ERN 6]

1332   On Page: 215   Line: 8355   Section: c99

1333   In the EXTENDED DESCRIPTION on Page 215, Lines 8355-8356, change from:

1334   "It is unspecified whether the libraries libc.a, libm.a, librt.a,
1335   libpthread.a, libl.a, liby.a, or libxnet exist as regular files."

1336   to:

1337   "It is unspecified whether the libraries libc.a, libm.a, librt.a,
1338   libpthread.a, libl.a, liby.a, or libxnet.a exist as regular files."

1339   Rationale: The reference to the libxnet library should be libxnet.a.

1340   **Change Number: XCU/TC1/D6/14** [XCUft2 ERN 7]

1341   On Page: 226   Line: 8736   Section: cd

1342   In the SYNOPSIS, change from:

1343   cd [-L] [-P] [directory]

1344   to:

1345   cd [-L|-P] [directory]

1346   Rationale: The options -L and -P are mutually-exclusive.

1347   **Change Number: XCU/TC1/D6/15** [XCU ERN 2]

1348   On Page: 233   Line: 9027   Section: chgrp

1349   In the SYNOPSIS, change from:

1350   chgrp -hR group file ...

1351   to:

1352   chgrp [-hR] group file ...

1353   Rationale: The SYNOPSIS does not show options as optional.

1354   **Change Number: XCU/TC1/D6/16** [XCUft3 ERN 2]

1355   On Page: 238   Line: 9245-9248   Section: chmod

1356   Change from:

1357   "The perm symbol t shall specify the S_ISVTX bit and shall apply to
1358   directories only. The effect when using it with any other file type is

1359 unspecified. It can be used with the who symbols o, a, or with no who
1360 symbol. It shall not be an error to specify a who symbol of u or g in
1361 conjunction with the perm symbol t; it shall be ignored for u and g."

1362 to:

1363 "The perm symbol t shall specify the S_ISVTX bit. When used with a file
1364 of type directory, it can be used with the who symbol a, or with no
1365 who symbol. It shall not be an error to specify a who symbol of u, g,
1366 or o in conjunction with the perm symbol t, but the meaning of these
1367 combinations is unspecified. The effect when using the perm symbol
1368 t with any file type other than directory is unspecified."

1369 Rationale: This change is to permit existing behavior.

1370 **Change Number: XCU/TC1/D6/17** [XCU ERN 3]

1371 Page: 242 Line: 9389 Section: chown

1372 In the SYNOPIS, change from:

1373 chown -hR owner[:group] file ...

1374 to:

1375 chown [-hR] owner[:group] file ...

1376 Rationale: The SYNOPSIS does not show options as optional.

1377 **Change Number: XCU/TC1/D6/18** [XCU ERN 4]

1378 On Page: 272 Line: 10587 Section: cp

1379 In the SEE ALSO section, change from:

1380 "the *(Zy"

1381 to:

1382 "the System Interfaces Volume of IEEE Std 1003.1-2001"

1383 **Change Number: XCU/TC1/D6/19** [XCU ERN 5]

1384 On Page: 299 Line: 11588-11592 Section: date

1385 In the CHANGE HISTORY section, change from:

1386 "The following new requirements on POSIX implementations derive
1387 from alignment with the Single UNIX Specification:

1388 - The setting of system date and time is described, including how
1389   to interpret two-digit values if a century is not given.

1390 - The %EX modified conversion specification is added."

1391 to:

1392 "The following new requirement on POSIX implementations derives
1393 from alignment with the Single UNIX Specification:

1394 - The %EX modified conversion specification is added."

1395 **Change Number: XCU/TC1/D6/20** [XCUft4 ERN 2]

1396 On Page: 320 Line: 12320-12321 Section: diff

1397 In the STDOUT section, change Lines 12320-12321 to read:

1398   "Next, the range of lines in file1 shall be written in the following
1399   format if the range contains two or more lines:

1400   "*** %d,%d ****\n", <beginning line number>, <ending line number>

1401   and the following format otherwise:

1402   "*** %d ****\n", <ending line number>

1403   The ending line number of an empty range shall be the number of the
1404   preceding line, or 0 if the range is at the start of the file."

1405 In the STDOUT section, change Lines 12329-12330 to read:

1406   "Next, the range of lines in file2 shall be written in the following
1407   format if the range contains two or more lines:

1408   "--- %d,%d ----\n", <beginning line number>, <ending line number>

1409   and the following format otherwise:

1410   "--- %d ----\n", <ending line number>"

1411 Rationale: The previous specification for the behavior for 'diff -c'
1412 did not agree with existing practice when contexts contain zero lines
1413 or one line.

1414 **Change Number: XCU/TC1/D6/21** [Defect raised at May 2002 Plenary]

1415 On Page: 331 Line: 12688-12691- Section: echo

1416 In the OPERANDS section, change from:

1417   "If any operand is -n, it shall be treated as a string, not an option."

1418 to:

1419   "If the first operand is -n, or if any of the operands contain a
1420   backslash (\) character, the results are implementation-defined."

1421 On Line 12691, change from:

1422   "The following character sequences shall be recognized within
1423   any of the arguments:"

1424 to (as separate paragraph):

1425   "[XSI]On XSI-conformant systems: If the first operand is -n, it shall be
1426   treated as a string, not an option. The following character sequences
1427   shall be recognized on XSI-conformant systems within any of the
1428   arguments:"

1429 Extend the shading down to and including Line 12705.

1430 In the ENVIRONMENT VARIABLES section, mark the LC_CTYPE environment
1431 variable on Lines 12718-12720 with the XSI margin code and shade.

1432 In the STDOUT section, mark the sentence beginning on Line 12729 with
1433 the XSI margin code and shade:

1434   "Output transformations shall occur based on the escape sequences in
1435   the input. See the OPERANDS section."

1436 In the APPLICATION USAGE section, change the first paragraph from:

1437   "In the ISO/IEC 9945:1993 standard, ... omitted."

1438 to:

1439   "It is not possible to use echo portably across all POSIX systems unless
1440   both -n (as the first argument) and escape sequences are omitted."

1441 Change Line 12749 from:

1442   "The historic System V echo and the current requirements
1443   in this volume of IEEE Std 1003.1-2001 are equivalent to:"

1444 to:

1445   "The historic System V echo and the requirements on XSI implementations
1446   in this volume of IEEE Std 1003.1-2001 are equivalent to:"

1447 In the RATIONALE (Line 12772), change from:

1448   "The System V echo does not support any options, but allows escape
1449   sequences within its operands, as described in the OPERANDS section."

1450 to:

1451   "The System V echo does not support any options, but allows escape
1452   sequences within its operands, as described for XSI implementations in
1453   the OPERANDS section."

1454 Rationale: Revert to accommodate historical BSD behavior.

1455 **Change Number: XCU/TC1/D6/22** [XCUft4 ERN 3]

1456 On Page: 340 Line: 13069 Section: ed

1457 In the EXTENDED DESCRIPTION section, Interactive Global Command, after:

1458   "Note that the commands input as part of the execution of the
1459   G command can address and affect any line in the buffer."

1460 Add:

1461   "Any line modified by the command shall be unmarked."

1462 Rationale: A problem with the description of the ed "g" command was
1463 fixed in the revision by adding the text: "Any line modified by the
1464 command list shall be unmarked." It was an oversight to not do that
1465 here also.

1466 **Change Number: XCU/TC1/D6/23** [XCUft3 ERN 3]

1467 On Page: 398 Line: 15344 Section: ex

1468 In the RATIONALE section, change from:

1469   "ftp://ftp.rdg.opengroup/pub/mirrors/nvi"

1470 to:

1471   "ftp://ftp.rdg.opengroup.org/pub/mirrors/nvi"

1472 Rationale: Correct an invalid URL.

1473 **Change Number: XCU/TC1/D6/24** [XCUft2 ERN 10]

1474 On Page: 432 Line: 16698 Section: false

1475 In the STDERR section, change from:

1476   "None."

1477 to:

1478   "Not Used."

1479 Rationale: Section 1.11 (Utility Description Defaults, Page 24,
1480 Lines 979-998) does not provide a meaning for "None".

1481 **Change Number: XCU/TC1/D6/25** [XCUft2 ERN 11]

1482 On Page: 442-447 Line: 17024-17248 Section: file

1483 A large number of changes should be made to this reference page
1484 as follows:

1485 On Page 442, Line 17024, SYNOPSIS, change to:

1486   file [-dh][-M file][-m file] file ...
1487   file -i [-h] file ...

1488 with both lines shaded with the UP marking.

1489 On Page 442, Lines 17027-17039, DESCRIPTION, replace with:

1490   "The file utility shall perform a series of tests in sequence on each
1491   specified file in an attempt to classify it:

1492   1. If file does not exist, cannot be read, or its file status could
1493   not be determined, the output shall indicate that the file was
1494   processed, but that its type could not be determined.
1495   2. If the file is not a regular file, its file type shall be
1496   identified. The file types directory, FIFO, socket, block
1497   special, and character special shall be identified as such.
1498   Other implementation-defined file types may also be identified.
1499   If file is a symbolic link, by default the link shall be
1500   resolved and file shall test the type of file referenced by the
1501   symbolic link. (See the -h and -i options below.)
1502   3. If the length of file is zero, it shall be identified as an
1503   empty file.
1504   4. The file utility shall examine an initial segment of file and
1505   shall make a guess at identifying its contents based on position-
1506   sensitive tests. (The answer is not guaranteed to be correct.
1507   See the -d, -M, and -m options below.)
1508   5. The file utility shall examine file and make a guess at
1509   identifying its contents based on context-sensitive default
1510   system tests. (The answer is not guaranteed to be correct.)
1511   6. The file shall be identified as a data file."

1512 On Page 442, Line 17044, OPTIONS, change the description of the -d
1513 Option to:

1514   -d   Apply any position-sensitive default system tests and
1515   context-sensitive default system tests to the file.
1516   This is the default if no -M nor -m option is specified.

1517 On Page 442, Lines 17048-17060, change the description of the -i, -M,
1518 and -m options, and the interactions between options, to:

1519   -i   If a file is a regular file, do not attempt to classify the
1520   type of the file further, but identify the file as specified
1521   in the STDOUT section.

1522   -M file Specify the name of a file containing position-sensitive tests
1523   that shall be applied to a file in order to classify it (see
1524   the EXTENDED DESCRIPTION). No position-sensitive default
1525   system tests nor context-sensitive default system tests shall
1526   be applied unless the -d option is also specified.

1527   -m file Specify the name of a file containing position-sensitive tests
1528   that shall be applied to a file in order to classify it (see
1529   the EXTENDED DESCRIPTION).

1530   If the -m option is specified without specifying the -d option or the

```
1531    -M option, position-sensitive default system tests shall be applied
1532    after the position-sensitive tests specified by the -m option. If the
1533    -M option is specified with the -d option, the -m option, or both,
1534    or the -m option is specified with the -d option, the concatenation
1535    of the position-sensitive tests specified by these options shall be
1536    applied in the order specified by the appearance of these options.
1537    If a -M or -m file option-argument is -, the results are unspecified.

1538  On Pages 443-444, Lines 17089-17115, STDOUT, change the text to:

1539    "The values for <type> are unspecified, except that in the POSIX locale,
1540    if file is identified as one of the types listed in the following
1541    table, <type> shall contain (but is not limited to) the corresponding
1542    string, unless the file is identified by a position sensitive test
1543    specified by a -M or -m option.  Each space shown in the strings shall
1544    be exactly one <space>."

1545    Table 4-8: File Utility Output Strings

1546    If file is:                           <type> shall        Notes
1547                                          contain the string:

1548    Nonexistent                           cannot open

1549    Block special                         block special       1
1550    Character special                     character special   1
1551    Directory                             directory           1
1552    FIFO                                  fifo                1
1553    Socket                                socket              1
1554    Symbolic link                         symbolic link to    1
1555    Regular file                          regular file        1,2
1556    Empty regular file                    empty               3
1557    Regular file that cannot be read      cannot open         3

1558    Executable binary                     executable          4,6
1559    ar archive library (see ar)           archive             4,6
1560    Extended cpio format (see pax)        cpio archive        4,6
1561    Extended tar format (see ustar in pax)  tar archive       4,6

1562    Shell script                          commands text       5,6
1563    C-language source                     c program text      5,6
1564    FORTRAN source                        fortran program text 5,6

1565    Regular file whose type cannot be
1566        determined                        data

1567    Notes:
1568    1.  This is a file type test.
1569    2.  This test is applied only if the -i option is specified.
1570    3.  This test is applied only if the -i option is not specified.
1571    4.  This is a position-sensitive default system test.
1572    5.  This is a context-sensitive default system test.
1573    6.  Position-sensitive default system tests and context-sensitive
1574        default system tests are not applied if the -M option is
1575        specified unless the -d option is also specified.

1576    In the POSIX locale, if file is identified as a symbolic link (see the
1577    -h option), the following alternative output format shall be used:

1578    "%s: %s %s\n", <file>, <type>, <contents of link>"

1579    If the file named by the file operand does not exist, cannot be read,
1580    or the type of the file named by the file operand cannot be determined,
1581    this shall not be considered an error that affects the exit status.

1582  On Page 444, Line 17121, EXTENDED DESCRIPTION, change:

1583    "one test per line"

1584  to:
```

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1585   "one position-sensitive test per line"

1586 On Page 446, Lines 17223-17225, APPLICATION USAGE, add to the end of
1587 the paragraph:

1588   "Note also that on systems that recognize shell script files starting
1589   with "#!" as executable files, these may be identified as executable
1590   binary files rather than as shell scripts."

1591 On Page 447, after Line 17248, RATIONALE, add new paragraphs as follows:

1592   "The IEEE Std 1003.1-2001 description of default system tests and the
1593   interaction between the -d, -M, and -m options did not clearly indicate
1594   that there were two types of "default system tests". The "position-
1595   sensitive tests" determine file types by looking for certain string or
1596   binary values at specific offsets in the file being examined. These
1597   position-sensitive tests were implemented in historical systems using
1598   the magic file described above. Some of these tests are now built into
1599   the file utility itself on some implementations so the output can
1600   provide more detail than can be provided by magic files. For example,
1601   a magic file can easily identify a core file on most implementations,
1602   but can not name the program file that dropped the core. A magic file
1603   could produce output such as:

1604   /home/dwc/core: ELF 32-bit MSB core file SPARC Version 1

1605   but by building the test into the file utility, you could get output
1606   such as:

1607   /home/dwc/core: ELF 32-bit MSB core file SPARC Version 1, from 'testprog'

1608   These extended built-in tests are still to be treated as position-
1609   sensitive default system tests even if they are not listed in
1610   /etc/magic or any other magic file.

1611   The context-sensitive default system tests were always built into the
1612   file utility. These tests looked for language constructs in text files
1613   trying to identify shell scripts, C, FORTRAN, and other computer
1614   language source files, and even plain text files. With the addition of
1615   the -m and -M options the distinction between position-sensitive and
1616   context-sensitive default system tests became important because the
1617   order of testing is important. The context-sensitive system default
1618   tests should never be applied before any position-sensitive tests even
1619   if the -d option is specified before a -m option or -M option due to
1620   the high probability that the context-sensitive system default tests
1621   will incorrectly identify arbitrary text files as text files before
1622   position-sensitive tests specified by the -m or -M option would be
1623   applied to give a more accurate identification.

1624   Leaving the meaning of -M - and -m - unspecified allows an existing
1625   prototype of these options to continue to work in a backwards-compatible
1626   manner. (In that implementation, -M - was roughly equivalent to -d in
1627   this specification.)"

1628 Rationale: The changes applied make the specification unambiguously
1629 describe what was intended.

1630 **Change Number: XCU/TC1/D6/26** [XCUft2 ERN 11]

1631 On Page: 442 Line: 17041-17042 Section: file

1632 In the OPTIONS section, change from:

1633   "The file utility shall conform to the Base Definitions volume of IEEE
1634   Std 1003.1-2001, Section 12.2, Utility Syntax Guidelines."

1635 to:

1636   "The file utility shall conform to the Base Definitions volume of IEEE
1637   Std 1003.1-2001, Section 12.2, Utility Syntax Guidelines, except that

1638   the order of the -m, -d, and -M options shall be significant."

1639 Rationale: The -m, -d, and -M options do not comply with Guideline 11
1640 of the Utility Syntax Guidelines.

1641 **Change Number: XCU/TC1/D6/27** [XCU ERN 9]

1642 On Page: 482 Line: 18565-18567 Section: getconf

1643 In the OPERANDS section, change from:

1644   "path_var A name of a configuration variable. All of the variables
1645   in the pathconf() function defined in the System
1646   Interfaces volume of IEEE Std 1003.1-2001 are supported
1647   and the implementation may add other local variables."

1648 to:

1649   "path_var A name of a configuration variable. All of the variables
1650   in the Variable column of the table in the description
1651   of the fpathconf() function in the System Interfaces
1652   volume of IEEE Std 1003.1-2001, without the enclosing
1653   braces, shall be supported. The implementation may add
1654   other local variables.

1655 On Page 482, Line 18569-18607, getconf, in the OPERANDS section,
1656 change from:

1657   "system_var A name of a configuration variable. All of the variables
1658   in the confstr() and sysconf() functions defined in the
1659   System Interfaces volume of IEEE Std 1003.1-2001 shall be
1660   supported and the implementation may add ...

1661   When the symbol listed in the first column ...

1662   {text omitted}

1663   XBS_LPBIG_OFFBIG_LINTFLAGS (LEGACY) ..."

1664 [Editorial Note: This includes removal of the table on Page 483.]

1665 to:

1666   "system_var A name of a configuration variable. All of the following
1667   variables shall be supported:

1668   - The names in the Variable column of the table in the
1669   description of the sysconf() function in the System
1670   Interfaces volume of IEEE Std 1003.1-2001 except
1671   for the entries corresponding to _SC_CLK_TCK,
1672   _SC_GETGR_R_SIZE_MAX, and _SC_GETPW_R_SIZE_MAX,
1673   without the enclosing braces.

1674   For compatibility with older versions of this
1675   specification, the following variable names shall
1676   also be supported:

1677   POSIX2_VERSION, POSIX2_C_BIND, POSIX2_C_DEV,
1678   POSIX2_CHAR_TERM, POSIX2_FORT_DEV,
1679   POSIX2_FORT_RUN, POSIX2_LOCALEDEF, POSIX2_SW_DEV,
1680   POSIX2_UPE

1681   and shall be equivalent to the same name prefixed with
1682   an underscore. This requirement may be removed in a
1683   future revision.

1684   - The names of the symbolic constants used as the name
1685   argument of the confstr() function in the System
1686   Interfaces volume of IEEE Std 1003.1-2001,
1687   without the _CS_ prefix.

```
1688                    - The names of the symbolic constants listed under
1689                      the headings `Maximum Values' and `Minimum Values'
1690                      in the description of the <limits.h> header in the
1691                      Base Definitions volume of IEEE Std 1003.1-2001,
1692                      without the enclosing braces.

1693                      For compatibility with older versions of this
1694                      specification, the following variable names shall
1695                      also be supported:

1696                        POSIX2_BC_BASE_MAX, POSIX2_BC_DIM_MAX,
1697                        POSIX2_BC_SCALE_MAX, POSIX2_BC_STRING_MAX,
1698                        POSIX2_COLL_WEIGHTS_MAX, POSIX2_EXPR_NEST_MAX,
1699                        POSIX2_LINE_MAX, POSIX2_RE_DUP_MAX

1700                      and shall be equivalent to the same name prefixed with
1701                      an underscore. This requirement may be removed in a
1702                      future revision.

1703                    The implementation may add other local values."
```

1704 **Change Number: XCU/TC1/D6/28** [XCU ERN 10]

1705 On Page: 495 Line: 19060,19063 Section: grep

1706 In the EXAMPLES section, Line 19060, change from:

1707   grep -F 'abc|def'

1708 to:

```
1709    grep -F 'abc
1710    def'
```

1711 Line 19063, change from:

1712   grep -F -x 'abc|def'

1713 to:

```
1714    grep -F -x 'abc
1715    def'
```

1716 Rationale: The examples using the grep -F option do not match the
1717 normative description of the -F option.

1718 **Change Number: XCU/TC1/D6/29** [XCU ERN 11]

1719 On Page: 503 Line: 19270-19305 Section: iconv

1720 In the SYNOPSIS, Line 19270, change from:

1721   iconv [-cs] -f fromcode -t tocode [file ...]

1722 to:

```
1723    iconv [-cs] -f frommap -t tomap [file ...]
1724    iconv -f fromcode [-cs] [-t tocode] [file ...]
1725    iconv -t tocode [-cs] [-f fromcode] [file ...]
```

1726 In the DESCRIPTION, Line 19283, change from:

1727   "Omit any invalid characters from the output."

1728 to:

```
1729    "Omit any characters that are invalid in the codeset of the input
1730    file from the output."
```

1731 On Lines 19284-19285, in the -c option description, change from:

1732   "(either those that are not members of the fromcode or those that
1733   have no corresponding value in tocode) shall"

1734 to:

1735   "(either those that are not characters in the codeset of the input
1736   file or that have no corresponding character in the codeset of the
1737   output file) shall"

1738 On Lines 19288-19296, the -f fromcode option description, change:

1739   "-f fromcode
1740   Identify the codeset of the input file. If the
1741   option-argument contains a slash character, iconv shall
1742   attempt to use it as the pathname of a charmap file, as
1743   defined in the Base Definitions volume of IEEE Std
1744   1003.1-2001, Section 6.4, Character Set Description File.
1745   If the pathname does not represent a valid, readable
1746   charmap file, the results are undefined. If the
1747   option-argument does not contain a slash, it shall be
1748   considered the name of one of the codeset descriptions
1749   provided by the system, in an unspecified format. The
1750   valid values of the option-argument without a slash are
1751   implementation-defined. If this option is omitted, the
1752   codeset of the current locale shall be used."

1753 to:

1754   "-f fromcodeset
1755   Identify the codeset of the input file. The implementation
1756   shall recognize the following two forms of the fromcodeset
1757   option-argument:

1758   fromcode   The fromcode option-argument must not contain a
1759   slash character. It shall be interpreted as
1760   the name of one of the codeset descriptions
1761   provided by the implementation in an
1762   unspecified format. Valid values of fromcode
1763   are implementation-defined.
1764   frommap   The frommap option-argument must contain a
1765   slash character. It shall be interpreted as
1766   the pathname of a charmap file as defined in
1767   the Base Definitions volume of IEEE Std
1768   1003.1-2001, Section 6.4, Character Set
1769   Description File. If the pathname does not
1770   represent a valid, readable charmap file, the
1771   results are undefined.

1772   If this option is omitted, the codeset of the current locale
1773   shall be used."

1774 On Lines 19301-19302, in the -s option description, change:

1775   "stream (either those that are not valid members of the fromcode or
1776   those that have no corresponding value in tocode) shall be specified
1777   in the system documentation."

1778 to:

1779   "stream (either those that are not valid characters in the codeset
1780   of the input file or that have no corresponding character in the
1781   codeset of the output file) shall be specified in the system
1782   documentation."

1783 On Lines 19304-19305, the -t fromcode option description, change from:

1784   "-t tocode
1785   Identify the codeset to be used for the output file. The

```
1786            semantics shall be equivalent to the -f fromcode option."

1787  to:

1788    "-t tocodeset
1789            Identify the codeset to be used for the output file. The
1790            implementation shall recognize the following two forms of the
1791            tocodeset option-argument:

1792            tocode   The semantics shall be equivalent to the -f
1793                     fromcode option.
1794            tomap    The semantics shall be equivalent to the
1795                     tomap option.

1796            If this option is omitted, the codeset of the current locale
1797            shall be used."

1798  Rationale: Inconsistencies with the iconv() function.
```

1799 Change Number: XCU/TC1/D6/30 [XCUft2 ERN 12]

1800 On Page: 551 Line: 21146 Section: locale

1801 In the STDOUT section, change from:

1802   `"%s=\""%s\""\n",`

1803 to:

1804   `"%s=\"%s\"\n",`

1805 Change Number: XCU/TC1/D6/31 [XCU ERN 15]

1806 On Page: 581 Line: 22337-22361 Section: m4

1807 In the EXAMPLES section, replace the entire section with the following:

1808   If the file m4src contains the lines:

```
1809        The value of `VER' is "VER".
1810        ifdef(`VER', ``VER'' is defined to be VER., VER is not defined.)
1811        ifelse(VER, 1, ``VER'' is `VER'.)
1812        ifelse(VER, 2, ``VER'' is `VER'., ``VER'' is not 2.)
1813        end
```

1814   then the command:

```
1815        m4 m4src
```

1816   or the command:

```
1817        m4 -U VER m4src
```

1818   produces the output:

```
1819        The value of VER is "VER".
1820        VER is not defined.

1821        VER is not 2.
1822        end
```

1823   The command:

```
1824        m4 -D VER m4src
```

1825   produces the output:

```
1826        The value of VER is "".
1827        VER is defined to be .
```

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```
1828        VER is not 2.
1829        end

1830    The command:

1831        m4 -D VER=1 m4src

1832    produces the output:

1833        The value of VER is "1".
1834        VER is defined to be 1.
1835        VER is 1.
1836        VER is not 2.
1837        end

1838    The command:

1839        m4 -D VER=2 m4src

1840    produces the output:

1841        The value of VER is "2".
1842        VER is defined to be 2.

1843        VER is 2.
1844        end
```

1845 [Editorial Note: All double quotes, grave accents, and acute accents in
1846 the above must remain as those characters. In this context, the pairs
1847 of acute and grave accents are very different from opening and closing
1848 double quotes. The blank lines in the example output sections are also
1849 VERY important.]

1850 **Change Number: XCU/TC1/D6/32** [XCUft2 ERN 13]

1851 On Page: 593 Line: 22848-22852 Section: mailx

1852 In the EXTENDED DESCRIPTION, change from:

1853   "Filenames, where expected, shall be subjected to the process of shell
1854   word expansions (see Section 2.6 (on page 36)); if more than a single
1855   pathname results and the command is expecting one file, the effects
1856   are unspecified. If the filename begins with an unquoted plus sign,
1857   it shall not be expanded, but treated as the named file (less the
1858   leading plus) in the folder directory. (See the folder variable.)"

1859 to:

1860   "Filenames, where expected, shall be subjected to the following
1861   transformations, in sequence:

1862   If the filename begins with an unquoted plus sign, and the
1863   folder variable is defined (see the folder variable), the
1864   plus sign shall be replaced by the value of the folder
1865   variable followed by a slash. If the folder variable is unset
1866   or is set to null, the filename shall be unchanged.

1867   Shell word expansions shall be applied to the filename (see
1868   Section 2.6 (on page 36)). If more than a single pathname
1869   results from this expansion and the command is expecting one
1870   file, the effects are unspecified."

1871 Rationale: IEEE PASC Interpretation 1003.2-1992 #122 identified a
1872 correction to be made in the 2001 revision, but the change was
1873 overlooked.

1874 **Change Number: XCU/TC1/D6/33** [XCU ERN 12]

1875 On Page: 680 Line: 26205 Section: od

1876 In the EXAMPLES section, change from:

1877   "od -A o -t o2x2x -n 18"

1878 to:

1879   "od -A o -t o2x2x -N 18"

1880 On Page 681, Line 26216, Section od, change from:

1881   "od -A d -t f -t o4 -t x4 -n 24 -j 0x15"

1882 to:

1883   "od -A d -t f -t o4 -t x4 -N 24 -j 0x15"

1884 Rationale: Some of the examples for od use an undefined "-n" option.
1885 This should have been "-N".

1886 **Change Number: XCU/TC1/D6/34** [XCUft4 ERN 5]

1887 On Page: 688 Line: 26489 Section: patch

1888 On Line 26489, OPTIONS, add the following to the -D define option text:

1889   "If the patched file is processed with the C preprocessor, where the
1890   macro "define" is defined, the output shall contain the changes from
1891   the patch file; otherwise, the output shall not contain the patches
1892   specified in the patch file."

1893 Rationale: The description of the patch -D option previously did not
1894 indicate which way round the ifdef selection should be.

1895 **Change Number: XCU/TC1/D6/35** [XCUft4 ERN 6]

1896 On Page: 701 Line: 27030-27065 Section: pax

1897 In the OPTIONS section, -o option, Line 27042, change the table entry
1898 from:

1899   %% A '%' character.

1900 to:

1901   %p The process ID of the pax process.
1902   %% A '%' character.

1903 On Line 27046, change from:

1904   %d/PaxHeaders/%f

1905 to:

1906   %d/PaxHeaders.%p/%f

1907 On Page 702, Line 27059, change the table entry from:

1908   %% A '%' character.

1909 to:

1910   %p The process ID of the pax process.
1911   %% A '%' character.

47

1912 On Line 27063, change from:

1913 $TMPDIR/GlobalHead.%n

1914 to:

1915 $TMPDIR/GlobalHead.%p.%n

1916 Rationale: Previously there was no way for the implementation
1917 (or the user) to ensure that different instances of pax extracting
1918 a file named "/a/b/foo" will not collide when processing the extended
1919 header information associated with "foo".

1920 **Change Number: XCU/TC1/D6/36** [XCUft4 ERN 7]

1921 On Page: 703 Line: 27119-27122 Section: pax

1922 In the OPTIONS section, Lines 27119 and 27122, change from:

1923   "-x B"

1924 to:

1925   "-x pax"

1926 **Change Number: XCU/TC1/D6/37** [XCUft2 ERN 16]

1927 On Page: 887 Line: 34262 Section: stty

1928 In the OPERANDS section, change from:

1929   "Enable (disable) icrnl"

1930 to:

1931   "Disable (enable) icrnl"

1932 Rationale: IEEE PASC Interpretation 1003.2-1992 #133 identified an
1933 error in the description of "stty nl", but the fix was overlooked in
1934 the revision.

1935 **Change Number: XCU/TC1/D6/38** [XCU ERN 13]

1936 On Page: 906 Line: 34938 Section: test

1937 In the OPERANDS section, add the XSI margin mark and shading to:

1938   "If $1 is '(' and $3 is ')', perform the unary test of $2."

1939 Rationale: This line relates to the use of parentheses as arguments
1940 to "test", so the line should be marked XSI.

1941 **Change Number: XCU/TC1/D6/39** [XCUft2 ERN 17,18]

1942 On Page: 929 Line: 35818,35820,35822,35824 Section: true

1943 In the STDERR section, change from:

1944   "None."

1945 to:

1946   "Not used."

1947 In the EXIT STATUS section, change from:

1948   "Default."

48   IEEE Std 1003.1-2001/Cor 1-2002 — Copyright © 2001-2003, IEEE and The Open Group. All rights reserved.

```
1949  to:

1950    "Zero."

1951  Rationale: The terms "None" and "Default" do not have defined
1952  meanings in the appropriate sections of Section 1.11, Utility
1953  Description Defaults.
```

1954 **Change Number: XCU/TC1/D6/40** [XCU ERN 14]

```
1955  On Page: 957  Line: 36795,36811,36814  Section: uniq

1956  In the ENVIRONMENT VARIABLES section, add before Line 36795:

1957    "LC_COLLATE
1958        Determine the locale for ordering rules."

1959  In the OUTPUT FILES section, Lines 36811 and 36814, change from:

1960    "the application shall ensure that the output file is empty or"

1961  to:

1962    "the output file shall be empty or"
```

1963 **Change Number: XCU/TC1/D6/41** [XCUft3 ERN 4]

```
1964  On Page: 997  Line: 38217  Section: vi

1965  In the EXTENDED DESCRIPTION, change from:

1966    Synopsis: [[

1967  to:

1968    Synopsis: [count] [[

1969  Rationale: The count is missing from the Synopsis although it is described
1970  elsewhere in the text.
```

1971 **Change Number: XCU/TC1/D6/42** [XCUft3 ERN 5]

```
1972  On Page: 998  Line: 38237  Section: vi

1973  In the EXTENDED DESCRIPTION, change from:

1974    Synopsis:  ]]

1975  to:

1976    Synopsis:  [count] ]]

1977  Rationale: The count is missing from the Synopsis although it is described
1978  elsewhere in the text.
```

5. Changes to Rationale

This section contains the set of changes to the original text of the Rationale.

1979 **Change Number: XRAT/TC1/D6/1** [XRAT ERN 1]

1980 On Page: 11 Line 338 Section: A.2.1.5

1981 Change from:

1982   "Options Groupsc"

1983 to:

1984   "Option Groups"

1985 **Change Number: XRAT/TC1/D6/2** [XRAT ERN 1]

1986 On Page: 13 Line: 439-440 Section: A.3 (Native Implementation)

1987 Change from:

1988   "these are marked prefixed with an asterisk"

1989 to:

1990   "these are marked suffixed with an asterisk"

1991 On Page 23, Line 842, change from:

1992   "see also {hosted implementation} and {cooperating implementation}."

1993 to:

1994   "see also {hosted implementation}."

1995 **Change Number: XRAT/TC1/D6/3** [Defect raised at May 2002 Plenary]

1996 On Page: 50 Line: 1986 Section: B.7.3.3

1997 Add the following text:

```
1998   "Technical Corrigendum Number 1 adds a correction that permits the
1999   Euro currency symbol and addresses extensibility. The correction is
2000   stated using the term "should" intentionally, in order to make this
2001   a recommendation rather than a restriction on implementations. This
2002   allows for flexibility in implementations on how they handle future
2003   currency symbol additions."
```

2004 **Change Number: XRAT/TC1/D6/4** [XRAT ERN 2]

2005 On Page: 98 Line: 3848 Section: B.2.4.2 (Realtime Signal Generation
2006 and Delivery)

2007 Change from:

2008   "SIGEV_NOTIFY"

2009 to:

2010   "SIGEV_THREAD"

2011 **Change Number: XRAT/TC1/D6/5** [XRAT ERN 3]

2012 On Page: 100 Line: 3971 Section: B.2.4.2 (Realtime Signal Generation
2013 and Delivery)

2014 Change from:

2015   "standard signals in the process signal mask and in the sa_mask
2016   installed by the signal"

2017 to:

2018   "standard signals in the thread signal mask and in the sa_mask
2019   installed by the signal"

2020 On Page 209, Line 8698, Section B.3.1 (Examples for Spawn), change from:

2021   "/* Worry about process signal mask */"

2022 to:

2023   "/* Worry about thread signal mask */"

2024 **Change Number: XRAT/TC1/D6/6** [XRAT ERN 4]

2025 On Page: 263 Line: 10846 Section: C.4 (Exclusion of Utilities)

2026 Delete Lines 10846 and 10847.

2027 Rationale: The commentary about tsort being excluded is incorrect.
2028 It is an XSI utility.