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# Factorizations of a^n  1, 13  a < 100: update 2

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# Factorizations of $a^n \pm 1$, $13 \leq a < 100$: Update 2

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**Abstract**

This Report updates the tables of factorizations of $a^n \pm 1$ for $13 \leq a < 100$, previously published as CWI Report NM-R9212 (June 1992) and updated in CWI Report NM-R9419 (September 1994). A total of 760 new entries in the tables are given here. The factorizations are now complete for $n < 67$, and there are no composite cofactors smaller than $10^{94}$.

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*Key words and phrases.* Factor tables, ECM, MPQS, SNFS

# 1 Introduction

For many years there has been an interest in the prime factors of numbers of the form $a^n \pm 1$, where $a$ is a small integer (the *base*) and $n$ is a positive exponent. Such numbers often arise. For example, if $a$ is prime then there is a finite field $F$ with $a^n$ elements, and the multiplicative group of $F$ has $a^n - 1$ elements. Also, for prime $a$ the sum of divisors of $a^n$ is $\sigma(a^n) = (a^{n+1} - 1)/(a - 1)$. Numbers of the form $a^n + 1$ arise as factors of $a^{2n} - 1$ and in other ways.

An extensive table of factors of $a^n \pm 1$ for $a \leq 12$ has been published by Brillhart *et al* [10]. The computation of these tables is referred to as the *Cunningham Project* in recognition of the pioneering computations of Cunningham and Woodall [12]. For a history, see the Introduction in [10].

The tables [10] are limited to $a \leq 12$, but many applications require larger bases. In June 1992 tables covering the range $13 \leq a < 100$ were published [9]. The exponents $n$ satisfied $a^n < 10^{255}$ if $a < 30$, and $n \leq 100$ if $a \geq 30$. An update [8] containing 780 new factorizations (with the same limits for $a$ and $n$) was published in September 1994.

Since the first update [8], many new factors have been found. The factorizations are now complete for $n \leq 66$, and there are no composite cofactors with fewer than 95 digits[1]. This report gives all the new (complete or partial) factorizations found from the publication of [8] to 22 March 1996. Altogether, 760 factorizations are listed, involving 882 new factors[2]. Table 1 summarizes progress since the publication of the original tables [9].

Table 1: Statistics regarding the Tables and Updates

| Tables | Date | Smallest composite | Complete to exponent | Total entries | Complete entries |
|---|---|---|---|---|---|
| Original | June 1992 | 81 digits | 46 | 13882 | 10789 |
| Update 1 | Sept. 1994 | 87 digits | 58 | 780 | 649 |
| Update 2 | March 1996 | 95 digits | 66 | 760 | 590 |

Table 2 shows the number of prime factors of different sizes found for Updates 1 and 2 (excluding large factors obtained by division). The median size is 26 digits for Update 1 and 29–30 digits for Update 2.

Table 2: Distribution of Factors

| Digits | Update 1 | Update 2 |
|---|---|---|
| 14–19 | 17 | 24 |
| 20–24 | 333 | 144 |
| 25–29 | 329 | 273 |
| 30–34 | 154 | 197 |
| 35–39 | 72 | 99 |
| 40–45 | 44 | 89 |
| 45–49 | 9 | 39 |
| 50–56 | 1 | 17 |
| Total | 959 | 882 |

[1] "digits" always means "decimal digits".

[2] Here and elsewhere we do not count large factors which are obtained by division.

## 2 Format of the Updates

The format of Update 2 is the same as that of Update 1. Only those entries which have changed since Update 1 are given. For each base $a$, not a perfect power, in the range $13 \le a < 100$, we give two separate tables –

*Table* $a-$: factorizations of $a^n - 1$, $n$ odd.
*Table* $a+$: factorizations of $a^n + 1$.

The exponent ranges are as in the tables [9] –

$13 \le a < 30$, exponents $n$ such that $a^n < 10^{255}$.
$30 \le a < 100$, exponents $n \le 100$.

The entries are similar in format to those of the "short" tables in [10]. All known factors, including algebraic and Aurifeuillian [5] factors, are listed. Factors which are given as decimal numbers are primes. Exponents are indicated by a hat (^), for example "2^3" means $2^3$. Multiplication is indicated by a period (.), for example $3^3 + 1 = 2^2 7$ is written as "2^2.7". A period at the end of a line implies that the factorization is continued on the next line. An underscore (_) at the end of a line means that a (large) factor is continued on the next line (see, for example, the entry for $19^{177} - 1$).

The largest factor of $a^n \pm 1$ may be found by division by the smaller factors. Thus, such factors are abbreviated. The notation $p_{xy}$ or "`pxy`" means a prime factor of `xy` digits. For example, the prime 1238926361552897 might be abbreviated as `p16`. Similarly, the notation $c_{xy}$ or "`cxy`" means a composite number of `xy` digits.

An indication of the person[3] and method responsible for finding a new factor is given in square brackets (usually on the same line as the factor). Factors found by the authors using ECM or MPQS are not marked unless they have at least 30 digits.

## 3 Availability of Tables and Updates

These updates are available by anonymous ftp from `ftp://nimbus.anu.edu.au/pub/Brent/rpb134u2.txt.Z` and from `ftp://ftp.cwi.nl/pub/herman/Cunn2up2.txt.Z` (compressed text files).

The complete tables incorporating Updates 1 and 2 are available by anonymous ftp from `ftp://nimbus.anu.edu.au/pub/Brent/factors/table*` and from `ftp://ftp.cwi.nl/pub/herman/factors/table*` . For example, the file `table13p` is a table of factorizations of $13^n + 1$ for $n = 1(1)228$, and the file `table99m` is a table of factorizations of $99^n - 1$ for $n = 1(2)127$. (The restriction $n \le 100$ for bases $a \ge 30$ has been relaxed for these tables; we only require $a^n < 10^{255}$.)

A database of over 207,000 factors, for bases $2 \le a < 1000$ with various exponent ranges, is available by anonymous ftp from `ftp://nimbus.anu.edu.au/pub/Brent/rpb117.exe` (a self-extracting IBM PC archive). This includes factors in the range $2 \le a \le 12$ from the Cunningham tables [10], factors in the range $100 < a < 1000$ (including some from the tables of Mitsuo Morimoto *et al* [22]), and 15902 factors of Fibonacci and Lucas numbers from the tables of John Brillhart, Wilfrid Keller, Peter Montgomery and Robert Silverman [11, 14]. The database may be accessed using an IBM-compatible PC and programs provided in the above archive (see [4] for details). The database is built into the symbolic algebra package Magma and is used by the integer factorization routines in Magma [3, §19.9].

[3]Except for the three authors. Factors marked simply "ECM" were found by Brent or Montgomery, those marked "MPQS" were found by Brent or te Riele, and those marked "SNFS" were found by Montgomery.

# 4 Factorization Methods

Since Update 1 we have attempted to factor the remaining composite numbers in the tables by using the *elliptic curve method* (ECM). Sometimes ECM is successful in finding one or more factors. If the factorization can not be completed by ECM, but the remaining composite part is sufficiently small, we use the *multiple polynomial quadratic sieve* (MPQS) method to complete the factorization. In some cases we prefer to use the *special number field sieve* (SNFS) if it is predicted to be faster than MPQS (the choice depends upon the size of the known non-algebraic factors of the number $a^n \pm 1$).

We do not describe ECM, MPQS or SNFS here. The reader should refer to [17, 18, 20] for a general description of ECM, to [24] for MPQS, and to [16] for SNFS.

The particular implementations of ECM by Brent and Montgomery are described in [7, 19]. Computational details regarding the factorizations of various entries in Update 1 and in this Update 2, obtained with an implementation of the "two large primes variation" (PPMPQS) of MPQS on SGI workstations and on a Cray C90 vector computer, are given in [2]. The implementation of SNFS used by Marije Elkenbracht-Huizing and Peter Montgomery is described in [13].

In the following we do not distinguish between different versions of the basic methods (e.g. PMPQS and PPMPQS, ECM and ECM/FFT).

ECM is useful for finding factors of up to about 35 digits, although it occasionally finds larger factors [6, 7]. The largest factor found by ECM in the course of preparation of this update is a 47-digit factor

$$p_{47} = 28207978317787299519881883345010831781124600233$$

of $30^{109} - 1$ (found by Peter Montgomery on 25 February 1996). We knew that

$$\begin{aligned} 30^{109} - 1 \;\; = \;\; & 29 \cdot 134507 \cdot 111452974016629781 \cdot 186396925108160876357503 \cdot \\ & 606634196218051650804040 81 \cdot c_{89} \, , \end{aligned}$$

and Montgomery's program split the $c_{89}$ into the product of two prime factors $c_{89} = p_{42} \cdot p_{47}$. ECM did not find the 42-digit factor

$$p_{42} = 731551028948799148140437455525315594459547$$

directly; instead it found $p_{47}$, and $p_{42} = c_{89}/p_{47}$ was then computed by division[4].

We have used MPQS to factor many numbers of less than 100 digits. Examples and statistics are given in [2]. We mention one example by a collaborator. In January 1996 we knew that

$$24^{97} - 1 = 23 \cdot 4541347 \cdot 692914476608954328063818246 41 \cdot c_{98} \, .$$

Paul Leyland helped complete the tables for $a \le 30$, $n \le 100$, by finding the factorization

$$c_{98} = 735188076230554847645434565498487568795271 \cdot p_{56} \, .$$

We give an example of the use of SNFS. We knew $26^{97} + 1 = 3^3 \cdot 971 \cdot c_{133}$. Using SNFS, Montgomery found

$$c_{133} = 13831583853867062686286310340776049737988149125269 \cdot p_{84} \, .$$

Other notable examples completed by SNFS are $29^{94}+1$, whose $c_{116}$ factor was split into $p_{56} \cdot p_{61}$; and $86^{64} + 1 = c_{124} = p_{56} \cdot p_{68}$. (These 56-digit factors are the largest new penultimate factors listed in Update 2.)

[4]For the skeptical reader: details of the "lucky" elliptic curve and group order, proving that ECM found the 47-digit factor, are given in [6]. Although smaller factors are usually found before larger ones, there is no *guarantee* that ECM will find factors in increasing order of size. For another example, see the entry for $29^{83} - 1$ (where a 37-digit factor was found by ECM but a 27-digit factor was missed).

Table 3: Factors Found by Different Methods

| | Pollard $p-1$ | Pollard $p+1$ | ECM (30D+) | MPQS (30D+) | SNFS |
|---|---|---|---|---|---|
| Update 1 | 38 | 16 | 69 | 157 | 37 |
| Update 2 | 0 | 3 | 151 | 155 | 136 |

Table 3 shows the number of factors found by several methods in the preparation of Updates 1 and 2. For ECM and MPQS these only include penultimate factors of at least 30 digits. An increase in the use of SNFS and decline in the use of Pollard's $p \pm 1$ methods [23] is evident. There is also a marked increase in the number of large (at least 30-digit) factors found by ECM. Most of the new factors found by MPQS and SNFS are large because these methods are only used after ECM has been tried without success.

A summary of new factors found over a recent three-month period (from 19 Dec 1995 to 22 March 1996) is given in Table 4. In the table, "normal range" means the usual limits on base and exponent (as for this Update); "extended range" means the additional numbers $a^n \pm 1$ (with $30 \le a < 100$, $n > 100$, $a^n < 10^{255}$) which are not given in this Update but are available in machine-readable form (see §3). The table suggests that there are few factors with less than 24 digits still to be found in the normal range, and similarly for factors with less than 22 digits in the extended range. A comparison with Table 2 shows progress: factors of less than 25 digits are now found only rarely, and the median size of the factors found is steadily increasing.

Table 4: Recent Factors

| | Number of new factors | Number less than 25 digits | Smallest (digits) | Median (digits) | Largest (digits) |
|---|---|---|---|---|---|
| Normal range | 167 | 3 | 24 | 32 | 56 |
| Extended range | 96 | 7 | 22 | 29 | 47 |
| Combined range | 263 | 10 | 22 | 31 | 56 |

## 5 First Holes

A "first hole" is the first composite number occurring in a table. Thus, each table of factorizations is complete up to, but not including, its first hole. Table 5 lists the exponents of the current first holes for $2 \le a < 100$ (the range $2 \le a \le 12$ is included for the sake of comparison). For example, the first holes in the tables for $a = 17$ occur for exponents 103 and 106. In fact, these holes ($17^{103} - 1 = 2^4 \cdot c_{126}$ and $17^{106} + 1 = 2 \cdot 5 \cdot 29 \cdot 1061 \cdot c_{125}$) are good candidates for factorization by SNFS.

## 6 Probable Primes

Numbers listed as prime have not in all cases been rigorously proved to be prime; they may merely have passed a probabilistic primality test [15]. There is a positive but extremely small probability that a composite number will pass such a test and be mistaken for a prime. In applications where it is essential for primality to be proven rigorously, one should apply an algorithm such as Morain's elliptic curve primality test [1, 21], which can easily prove or disprove the primality of numbers of the size considered here.

Table 5: Exponents of First Holes for $2 \le a \le 99$

| $a$ | $-$ | $+$ | $a$ | $-$ | $+$ | $a$ | $-$ | $+$ | $a$ | $-$ | $+$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 559 | 536 | 3 | 331 | 332 | 5 | 233 | 226 | 6 | 199 | 206 |
| 7 | 187 | 181 | 10 | 167 | 163 | 11 | 151 | 142 | 12 | 137 | 148 |
| 13 | 119 | 104 | 14 | 125 | 103 | 15 | 103 | 103 | 17 | 103 | 106 |
| 18 | 107 | 119 | 19 | 127 | 103 | 20 | 103 | 101 | 21 | 101 | 103 |
| 22 | 103 | 103 | 23 | 101 | 101 | 24 | 101 | 103 | 26 | 107 | 103 |
| 28 | 103 | 101 | 29 | 101 | 103 | 30 | 103 | 103 | 31 | 97 | 83 |
| 33 | 73 | 86 | 34 | 91 | 89 | 35 | 73 | 83 | 37 | 89 | 83 |
| 38 | 73 | 83 | 39 | 67 | 89 | 40 | 83 | 73 | 41 | 85 | 68 |
| 42 | 67 | 71 | 43 | 67 | 71 | 44 | 79 | 76 | 45 | 73 | 79 |
| 46 | 71 | 79 | 47 | 71 | 73 | 48 | 71 | 71 | 50 | 89 | 67 |
| 51 | 73 | 71 | 52 | 73 | 73 | 53 | 89 | 73 | 54 | 77 | 71 |
| 55 | 71 | 67 | 56 | 83 | 67 | 57 | 83 | 68 | 58 | 73 | 76 |
| 59 | 71 | 74 | 60 | 67 | 71 | 61 | 67 | 71 | 62 | 71 | 74 |
| 63 | 67 | 68 | 65 | 71 | 71 | 66 | 73 | 71 | 67 | 83 | 68 |
| 68 | 77 | 76 | 69 | 73 | 67 | 70 | 73 | 68 | 71 | 73 | 76 |
| 72 | 71 | 68 | 73 | 67 | 71 | 74 | 73 | 71 | 75 | 77 | 67 |
| 76 | 71 | 73 | 77 | 73 | 71 | 78 | 77 | 76 | 79 | 67 | 74 |
| 80 | 73 | 73 | 82 | 71 | 67 | 83 | 67 | 73 | 84 | 67 | 76 |
| 85 | 67 | 73 | 86 | 71 | 71 | 87 | 67 | 71 | 88 | 79 | 74 |
| 89 | 83 | 74 | 90 | 73 | 68 | 91 | 83 | 68 | 92 | 67 | 68 |
| 93 | 67 | 73 | 94 | 67 | 74 | 95 | 67 | 67 | 96 | 71 | 73 |
| 97 | 67 | 73 | 98 | 73 | 71 | 99 | 67 | 67 | | | |

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Henk Boender, Harvey Dubner, Wilfrid Keller, Samuel Wagstaff, Jr., and Georg Wambach provided factors outside the range of this update (but included in the database [4]).

John Cannon and Allan Steel incorporated our database of factors into the Magma package and incidentally helped to debug our table-generating programs.

Walter Lioen helped us with the solution of various implementation problems.

The Australian National University Supercomputer Facility provided computer time to run the first author's ECM programs on a Fujitsu VP 2200/10 vector processor and an SGI Power Challenge. The ANU-Fujitsu CAP Research Project provided time on a Fujitsu AP 1000.

The Dutch National Computing Facilities Foundation, NCF (the former Dutch Working Group on the Use of Supercomputers), provided computer time to run the programs of Boender, Elkenbracht-Huizing, Montgomery, and te Riele on Cray Y-MP4 and Cray C98/4256 vector computers.

The majority of the runs with ECM, MPQS and SNFS were carried out on about 70 SGI workstations at CWI and about 30 SGI workstations at Leiden University. With ECM, different numbers were run on different workstations; the MPQS sieving for each number with 87–94 digits was done in parallel on several workstations at the same time, and similarly for the SNFS

[5]MullFac is the *Isle of Mull Factoring Group* (Richard Edwards, Willie Gough, George Sassoon and Vivian Stephens).

sieving. We are grateful to the workstation "owners" at CWI and Leiden University for letting us use their idle cycles for this project.

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13 163- 2^2.3.8693117.1279033291.57483449583854824247.p145

13 165- 2^2.3^2.23.61.419.859.2861.4651.18041.30941.161971.
13545148572117361.1755103211998167904672 9.8603427927040724342317061.
338604792696430741601872477384032 1.p56 [ECM]

13 167- 2^2.3.74016071.199494205465879.863628686858502013448191.c139

13 171- 2^2.3^3.61.1609669.10692289.12865927.796956375829.
9468940004449.1707914176047127.1157962690858544717619597 9823.
146541876508465687957037289 01.p70 [Mueller, ECM]

13 181- 2^2.3.5431.23531.30047.423541.32598463.1244504930700295881445351.c151

13 191- 2^2.3.3674491999.34115367574721.
848973810324896749685412039896 17.p157 [ECM]

13 193- 2^2.3.27281323.223486667.1468937560453708434469.c177

13 211- 2^2.3.318872063.453216197376414128940399015272903.c193 [ECM]

13 223- 2^2.3.6691.883973.609240789000934129655613721.c211

13 121+ 2.7.8713.131891.1801207.2644917463.128011456717.
2365376758159014858561480175227 91.p66 [ECM]

13 130+ 2.5^2.17.421.521.601.641.380329.5218721.6691361.
1418792215861230619657.72395677076468070119906108281513841.p56
[Boender, MPQS]

13 139+ 2.7.245753.18466388799146717978191.p127

13 154+ 2.5.17.5281.7393.1702933.150324329.23161037562937.
718377597171850001.3577574298489429481.
420900644259988215848559169624226 3069.p61 [ECM]

13 157+ 2.7.1571.9421.1579421.1302884463846205672630741.c137

13 166+ 2.5.17.1993.417489312958537.7125033932032626887688109.c141

13 173+ 2.7.100512721293404023.33244834894845209424542011.c150

13 174+ 2.5.17.233.349.2437.28393.1321357.14114031000998557.
209707147325547983048 09.1817878225890326008168354 9.
456034561045737430608618837762 1. [MPQS]
488985925366586828206030477287587232 97.p41

13 176+ 2.353.2657.441281.15020897.21068609.283763713.
19395547354657.29919435299224417.161812513752466240577.c112

13 188+ 2.14281.41737.553784729353.188172028979257.
398225319299696783138113.c151

13 190+ 2.5^2.17.229.421.601.641.94621.22000710008560364143650941501.
58019696191004680531294478324076l.p133

13 200+ 2.401.1201.407865361.45604314401.10381913540858401.
689249499714233698770401.44277926323403992859535928774463904l.p123

13 202+ 2.5.17.809.20201.4778818919489153480993.2030722571339514489976l.p172

13 211+ 2.7.330963403934881.17998835060428047044587837654l.c191 [ECM]

13 212+ 2.14281.92009.18464777.84863647489.29610225396005426585019472l.c183

13 213+ 2.7.157.149191250053.3613686905823384089701
9.532615479720542238328159944384931.
16498185929529009087842699981910331466120064l.c123

13 222+ 2.5.17.149.6217.14653.28393.201091153.1738568407946597.
596131104371449237.72899319864895280400157.120687541344843078804469.
14387348461209698652401760389644l93. [Silverman, MPQS]
18612127391702185440891755251230558753250357450l9.p63

13 224+ 2.193.449.1601.10433.83777.114689.58317286721.
101992282252756344319l7.10759970447698109015939009.
68675120456139881482562689.p144

14 107- 13.80096563.643017670864558214763915l3.
11532779639819150795491142557.p60 [Boender, MPQS]

14 141- 13.211.659.3690629.10359553.21156769.24572071.
448949419365895788600408081l9.805955842407397424961988351l21.p70

14 167- 13.56113.206761699.12941778614480077.158457886097443097602427.c138

14 173- 13.347.1039.101277671419.37624878383126067779.
181970667940642863095683l.37914367779198257247435932l27.
150536933157602571754070083l09.
56681267519217647103754502162450376l7.p46 [Silverman, MPQS]

14 185- 11.13.223.3701.3761.141405986837.150688111051.
103388733161883098912201.62233081779326835585800864l81.c128

14 189- 13.43.211.379.397.547.18973.168211.8108731.407364049.
1427145211.2239000891.299113818931.59320570714147.
24810428989195639149657l9.11798561927390993250016639652l11.p81

14 209- 13.67.4027.6271.1154539.1055396497.459715689149916492091.
191809109956216546363818l7.c170

14 107+ 3.5.3171052065980518593673l9.66341664903364076973672661317295l9.p66
[ECM]

14 109+ 3.5.1812463861381.701183426180177619461.
220965542290849884622661375409566l09.p57 [Boender, MPQS]

14 112+ 193.449.1004200961.11284732320255809.
635481223669711619567673207068828183932880558O9.p52 [SNFS]

14 121+ 3.5.23.926748439.11737870057.2124371843617.858940655421377.
22760200112136743972454726971703923303.p53 [Sosnowski, MPQS]

14 129+ 3^2.5.61.1487887.68138548314176704687.187940941603167722543704529 29.
29209345276055807561909669621 83.p60 [SNFS]

14 146+ 197.6133.58596307485137.101505256813451472997.c128

14 156+ 41.313.937.1873.122929.1475750641.24265055276489.
467730390623396534073677329.184910254591279564930587063990205 7.p81

14 166+ 197.673961.6370407060334937.21866510156173517.
162433264321436536606616041 3.p123

14 176+ 193.353^2.11284732320255809.167613055195154909107510089 7.p152

14 184+ 17.5393.16097.98993.121552767680660753.
12238816080349300513.38081282962177621651057.c138

14 185+ 3.5^2.71.101.1481.251231.283051.118918748615980063.
417692329496249741.5052787535809680019.c139

14 187+ 3.5.23.137.11737870057.666132173059.14837638311110071.
23878413540855848507569841 3.c146

14 189+ 3^4.5.19.61.127.463.2647.15121.45361.132049.7027567.
64234297.1177426963.43075927441.120850766857.
131147620297.74877315024065921316456304039 3. [Sosnowski, MPQS]
14353698023129648049414032750948138329 3.p64

14 212+ 41.937.94716416097137.29141065591961018708809.
23655390404274304837011732679 7.c172 [ECM]

14 220+ 41.89.937.1321.3697.27281.61001.698521.51111761.
2211409011924781241.66215836336157644841.9620587412095263092017.p157

15 125- 2.7.11.251.4931.46751.7112705843777290751.
27189380364861026741732 1.p91

15 133- 2.7^2.149759.229027.780179.1743463.4272113.
370649274902657.185365102126290007079555 7.
21811051572266308968116345729812 3.p52 [Boender, MPQS]

15 151- 2.7.907.2417.7853.539366051533252310579.8751090774771560578063.p124

15 157- 2.7.1571.227677817616311475823.40752349569706646365133371 3.p133

15 169- 2.7.53.677.157483.16655159.2266891303.2318610737675897213064413.p147

15 181- 2.7.377495969269691980356692297 .c185

15 207- 2.7.241.541.829.967.21061.31741.434956681.80732172121.
3046462151831565769.87412509749473746906 7.
153908199071740625749971976183.c135

15 209- 2.7.67.419.463.2333.8537.4272113.370649274902657.
310696428100789261359841.28301701687161966625968292 27.p159

15 215- 2.7.11.431.4931.1833802200566194141.4814957964951736081.
266560689879803864144085829528713864939553397042 41.c158

15 107+ 2^4.12841.28463.706201.32080966073306964705079.p88

15 138+ 2.13.113.277.2393.3877.90529.488153.132653513.40193672100977.
3230238627505403797.67740995206699955121858385321.p70

15 142+ 2.113.853.25385909.14292190347261534654818189.c130

15 144+ 2.97.257.7489.91297.338034241.2544790753.
12779004583099009.48718291380718486017304741370 89.
774358387624252122372571688750 2753.p58 [Sosnowski, MPQS]

15 146+ 2.113.877.5449690713997.52520601112477.
2538863031370281918989.2971128156948325838993.c98

15 161+ 2^4.47.6257.81421.825287.10678711.22414099.
3549551867.42718929115628650779049.c126

15 163+ 2^4.218048391340241461.188681025796607495 4031.
3176943493376606700922418538644207.p119 [ECM]

15 164+ 2.17.1489.127921.784577.1823226049.
3059023037251973170987988137852 1.c137 [ECM]

15 169+ 2^4.79.1539711288259.792402808564069.368117275302148236983.c149

15 170+ 2.113.19421.29173.131381.712573.3576121.486068761.3395062589.
608605859277144821.47873588568577331761.37686497208110926335063461.
693293533084895074786926363295501890154 1.p51 [Boender, MPQS]

15 172+ 2.17.1033.1489.1721.16781353.19623137.
23668577.61098529.22987309628787159377.p143

15 176+ 2.257.9857.388961.5205199887361.
12779004583099009.47416999261373965697.c147

15 187+ 2^4.23.137.443.23504771357.37375160791.101462866544971.
8368786908686777.996745264013355671299.c141

15 200+ 2.401.1361.7121.179953.13535373521.
293260235255815351034801.234202711791566509181232 1.c163

15 208+ 2.257.2081.86113.80758913.12779004583099009.
111104618045176237319969.c187

15 211+ 2^4.118583.259531.281234421103222248619.c217

17 101- 2^4.10303.70297.41605133.1103896660507.
88296018585184110466501207935829.p63 [ECM]

17 123- 2^4.83.307.188437.892079.13365673.960217114820653.
18469031047049514697.19758253332426413381871517.p68

17 125- 2^4.251.2551.4751.5351.88741.26278001.11330289301.
44391312751.175255701251.68816472393153820848800798212 51.p65 [ECM]

17 151- 2^4.161873.68284702982788934633.59371036769017350174437.c137

17 179- 2^4.359.18617.121721.1108776121.
436077123974389502159.20959217525761917560729.c156

17 183- 2^4.307.15103230859721.80513057603299.
1655148745882817700457.15139473539268769064239.
48308253676848112063539853334095 9. [Boender, MPQS]
435305918535660122562181727360764482545675494694103141 5107.p61

17 205- 2^4.83.6971.88741.892079.13365673.960217114820653.
18469031047049514697.79850084042163757066084766 71.c166

17 103+ 2.3^2.619.1031.29430672276616100243204 81.
29287194797251670215981885035 41.p65 [ECM]

17 134+ 2.5.29.269.522580700249.99916936112637327284233469113 37.p118 [ECM]

17 135+ 2.3^5.7.11.13.31.71.101.163.1423.5653.238212511.
2220161311.28758863909916435817.152924817473166888991.
69179323152303423299755666170732061.p54 [ECM]

17 136+ 2.18913.71809.184417.2020961.804906380572033.
14046568851572244853744389 13.p105

17 137+ 2.3^2.556769.20443274925630863281.415293102721035675881.c122

17 141+ 2.3^3.7.13.283.144103.12279811993483.
46348663947821052650476903666987206930 67. [Sosnowski, MPQS]
72501596077421679100254755079975081841335666331936381.p57

17 142+ 2.5.29.569.314477853267581.3353052005080219157.c137

17 143+ 2.3^2.23.53.79.947.7723.65651.2001793.3480049.38845379.
87415373.91396813806307945079.39397372611339349403369287 1.p84

17 147+ 2.3^3.7^3.13.19993.22796593.711954517.88109799136087.
1465198716273377.45762097027549602301704846 53.
41039500045434951498793729193916 7.p66 [ECM]

17 149+ 2.3^2.2683.104003.1129168787.5463377342173.36865574187889154639.c133

17 151+ 2.3^2.10639763.968721286459.118326105546323.50627721146292527.c135

17 156+ 2.73.313.1321.41761.72337.62507849.2689171057.558796871153.
1175496327058885417.3568253436632855569.280629440120834208892 9.
250821550641085682649369972849337.p56 [Boender, MPQS]

17 158+ 2.5.29.317.6637.155473.643693.
184709888668241.4366856473165064069.c142

17 172+ 2.41761.568085898535206230489.p186

17 173+ 2.3^2.347.12457.21799.59167.2124023417.61339676678041506391.
111796626007322401109.243924058885081420399.c127

17 176+ 2.257.1801601.11983841.52548582913.106065010767039501592801.p167

17 179+ 2.3^2.9249632039.2468693670251.116260775844013.
535497494795147.5162678095179468239.c150

17 186+ 2.5.29.2729.5581.83233.323217409.759322433.
47630477497.23321390258237.729426109307672111981.
336298710637133831314534 21.189788380664232399265671 1489.c100

17 188+ 2.13913.41761.53017.774969841.1147276769.2805771894051115513.
308804484637130942022486219 5177.c151 [ECM]

17 193+ 2.3^2.6949.138207259471.2249401867464340847383.
396037488326076342435020 27.p175

17 200+ 2.241.401.18913.184417.3583912721.163633185836401.
156294234529572167201.27415174636866662290741112321.c160

17 203+ 2.3^2.349.23549.41413.2919779.14009843.22796593.1018003589.
18032534719.61878754061.7410235487199532735861.c165

17 205+ 2.3^2.11.71.101.1231.62919257.66808271.18798033503.
55769709089461.76203249126187.140606605811723.
13925036380184231.13381150281160878053242 1.p137

18 83- 17.167.59263.
868029648758671091092795597519448 09.p62 [Brent & Silverman, SNFS]

18 97- 17.3881.13095801870081056736126091926191471284 9.p79 [SNFS]

18 107- 17.857.699731916472904975886301278 23.c102

18 157- 17.258705857.512827566190506799.c170

18 163- 17.83519897.954077143.460220533264379449.
657150340817630535751823.c145

18 169- 17.79.521.4057.29759719289.198383812344828058391.c172

18 175- 17.41.71.449.2711.11551.80207.602401.4274201.1006771151.
2116238678727336960 1.4164889456901862302881.
142822063586538248694069751.p112

18 101+ 19.809.2292936589673.181090509107390181941026820752651 93.p76 [ECM]

18 109+ 19.8953511131739512054889.292060170337550914516231437 13.
169490612692287574588118884321.p56

18 113+ 19.227.21019.250409.168489244907487090477458189139616 1.p96 [ECM]

18 125+ 11.19.251.3251.9041.738851.19301767104251.17254127651933924651.
180182156384572588430251.840479842668421879999445962200 1.p53 [ECM]

18 127+ 19.326813520888984977.2224113911952795497.
401788281950966063513138148396904 3.p89 [Mueller & Sosnowski, ECM]

18 128+ 13183521051511297.4944182613719870977.p126

18 129+ 19.307.1291.21673.95203.5129762401.597455435179.
235339695517875593030155566 01. [Sosnowski, MPQS]
162765123513147874057654132564 33.p65

18 133+ 19^2.334363.32222107.1961870762757168078553.
284214430067717606616 19.245672045002917360625621 7.p84

18 136+ 97.113607841.109098022067869366514981110337.c132 [ECM]

18 161+ 19.63113.32222107.1865040051943737561257.
391303755863273304806940930 7.p140

18 176+ 1409.3930785153.30894471809.38033293099649.
110216823276588063936653633.364959412424843254531572427457.p129 [ECM]

18 178+ 5^2.13.2137.3917.4273.50909.956929.
108692497.55549978697.43117865855616361729.
193322551842582121976465490134 0101. [Boender, MPQS]
917763067707252500046093933333944176551829663148496079049.p72

18 179+ 19.6803.2043301177747126709233.p199

18 189+ 19.43.73.307.379.6427.46747.465841.32222107.337268233.
607371619.31865908033.1234749313729.443134151361467421266377.
438367952373320063196326319859. [ECM]
459102024143135891178728131766685715 3.p76

19 97- 2.3^2.350286401.11542175764721536214759.
240687124754690612623545190852 9.p62 [Sosnowski, MPQS]

19 101- 2.3^2.14747.34751300699970121.832072847051039530081.
52456476443168631828545 71.p62

19 109- 2.3^2.177889.256380863.1551391769.737917509151133574154027.
650493509939401440590914631239 4647.p58 [Sosnowski, MPQS]

19 149- 2.3^2.17861620747650701083307.p167

19 177- 2.3^3.127.709.68259547636548023031061.
155306613932666028670208812450645212905178047040045530562317564l_
21001023821.p123

19 187- 2.3^2.104281.999329.3044803.62060021.
99995282631947.58854661309549283955979 63.c174

19 191- 2.3^2.383.9073197533.1627822625875584606 2473.c209

19 82+ 2.181.8693.42990575818041363346802477581682872 5077.p60
[Elkenbracht-Huizing, SNFS]

19 89+ 2^2.5.158243.11829327296134329423670741183755644504536979 8697.p61
[Brent, Montgomery & Silverman, SNFS]

19 92+ 2.17.3833.32569.1714618866808633.
69903463890153585851159028436 2577.p60 [Boender, MPQS]

19 131+ 2^2.5.263.32228870928416430067.p145

19 144+ 2.97.8965830241.472594473124993.1486811410142377153.
27592829534412376509944696269537. [ECM]
83198449060887472631140495091974297750081.p67

19 152+ 2.8513.15073.40129.74177.563377.6536609.1768911570241.
38184210988752567254945089.c127

19 154+ 2.29.181.617.3697.5237.774797.50515081.61170649.
14533200697.289300378289693.48381877771677135533.
48565026713061620388848761.13600937777602856366984 1133.
77177312600790206536161158681569.p34 [MPQS]

19 166+ 2.181.1993.15540873402563320882796 69.c183

19 168+ 2.113.241.337.577.1009.4657.14561.14929.15073.29569.
563377.38645462353.107849044129.17984201028296497.
27328316054495569.34993581409770846807780 90303893281.
26168871234858167232514678609739331349747 3.p47 [Boender, MPQS]

19 169+ 2^2.5.131.313.14197.176021.240319.291331.5602771487.
1045514232116310503.65757587142849585350510266694897.c131 [ECM]

19 173+ 2^2.5.347.35401337.96327484711.5771606046967574197.c181

19 178+ 2.181.586549711036607087773.692955604336994802553.
1074230544376210109873.p163

19 195+ 2^2.5^2.7^3.11.61.131.271.313.2251.2341.176021.
291331.380251.1081291.7946641.2332339231.347014883671.
77685006382386461342123321.22024095980473143334656754 21.
29724428382487013185133894 0041. [ECM]
32517103945897936150604090968673380 1.p60

20 91- 19.29.71.3121.32719.142559.9690539.
104933918101562798067516186656513621.p59 [ECM]

20 127- 19.509.312576217052731918639.902432968521946693491922124 9.p113

20 137- 19.1139265971.5191247399142391382340999 91.p142

20 139- 19.601206971.1036929962665121969.p153

20 149- 19.17881.163901.2875786039296613518480371.c159

20 167- 19.287428711.37928589651593967631.c188

20 74+ 401.61244289678958373462403771583536382996866287437.p47 [SNFS]

20 95+ 3.7.152381.109850818001.2272727294381.
948097092910206388651766804512177141.p58 [SNFS]

20 98+ 197.401.3529.5881.14561.1424354653.
158801586229862983170858567089.p73 [ECM]

20 113+ 3.7.227.1583.714118397870688383.
1952326470639684809.44624993356391326687993369.p79

20 126+ 13.37.197.401.757.12277.14561.24877.1464961.8651161.1424354653.
4450002049.1327100500372993081.563620862060107868834952 13.p66

20 149+ 3.7.8941.365668924006307121973514 81.c164

20 151+ 3.7.637239329.5519525047.134514539969.
25876994961863.5847714892845957955723.p131

20 154+ 89.197.401.14561.3067373.1424354653.170770770413.
6881957521693.5103180693605872998161 4877.c124

20 156+ 313.937.31177.160001.821113.1961441.18452947657.15661954798153.
26916259659749909489.10175413746174757658474714856 49. [ECM]
56899379227776039878910037805591 77.p69

20 161+ 3.7^2.47.461.827.10529.563041.1379449.11637469336963.
3274400525856244223.141682646883922306961.c133

20 169+ 3.7.2081.2549.70875221.735408649.230127517497961669365689703 83.c167

20 182+ 53.197.401.14561.502321.1380289.19431413.1424354653.3613618786597.
628605693732325702045277.172995133133409822116974743113009.c130 [ECM]

20 187+ 3.7.23.1059169.2567783.2640509.92054423.424016563147.
451401795703.691332279196717538257218 7129.p163

20 190+ 41.401.2801.43321.222361.362478049.2622927733.
10806022965913863157865 21.720986986426331485927947950 53.c159

20 191+ 3.7.383.70018911943.1757822589992389.
152929221779038685502 7.32976171945298018943903.c175

21 91- 2^2.5.43.79.631.3319.189437.516094151.
353812693159424976785726570900207 47.p61 [SNFS]

21 97- 2^2.5.1747.298027069.99141858256733.
297486275607197408250248924265357329980 61.p61 [SNFS]

21 115- 2^2.5^2.47.1381.19597.40841.282924347471791.
139870566115103282847737.339496481253455601650346603795 1.p69 [ECM]

21 121- 2^2.5.17513875027111.2540094755709309216 1.p127

21 129- 2^2.5.463.1033.1135201.795343640186798780055231033679 9. [ECM]
358426142207830255244085880741447864931502338315967145 03.p72

21 139- 2^2.5.4329622389913701641.68742300111567002990838037 9.c138

21 149- 2^2.5.1193.4149000929822858713.c175

21 151- 2^2.5.907.6761621753.
3974667798337168284581.71961086116587981948793.c142

21 163- 2^2.5.13693.14599604213.561788105646941.
71382227518918280601812453.c160

21 185- 2^2.5^2.31081.40841.1681762703.10738834628461552327151.
79951056933535083926001183774530 99.c169

21 187- 2^2.5.51239.17513875027111.765464515091513689.
150209712475408459473 7.97544574725010766555569190304 9.p159 [ECM]

21 191- 2^2.5.383.2293.35527.1447399.12157448103888869384609.p213

21 79+ 2.11.417844817462795946414836654419431911407980186602 03.p54 [SNFS]

21 83+ 2.11.340541835197467124476215159811. [ECM]
599234439640761105568807535441750 63.p45 [Silverman, MPQS]

21 92+ 2.97241.7522289.781621671529.
161221571797478738993219280328977 37.p64 [ECM]

21 127+ 2.11.3049.3023767784043644159.525212323217088996809.
14948184961120158829387.p102

21 128+ 2.47364380213310995446855681.c144

21 146+ 2.13.17.20149.21483317.6899178178539541.
1405941375841813597.11133979244859457087136933.c120

21 149+ 2.11.7361367053.3562026657560934335039.p165

21 163+ 2.11.32315729.2029418578982306493819514591 57.c178 [ECM]

21 186+ 2.13.17.61.3181.66713.92753.601897.13163658325422541897.
5965934302583714931817.
263790388079541107039607586199349904436518481062297.c132

21 189+ 2.11.19.37.199.337.421.613.5077.17497.516349.734329.
81867661.22864311556633.164687866184773.4527391635851869.
7101932659132249.29530378898266681.231877932177836345689.
961474590085427681209737179 77.p84

21 191+ 2.11.3821.113586887116607.4296149125737272147.c215

21 192+ 2.257.641.1409.527489.70660081537.7196013143150373330433.
24205562509745753100018523227671345867544673681285934368 2689.c148

22 73- 3.7.293.158576068343449272805462340387058359161 1.p56 [SNFS]

22 89- 3.7.179.2137.4273.153389223186267028179713496 67.p81

22 91- 3.7^2.79.2003.16968421.5617662779.85107437663.
399038729570101851770821842995700631.p52 [Boender, MPQS]

22 113- 3.7.672577.1753309.2487809.128662931.
2506526773654667801.67200669985361530724070995293.
112937792848333124003145683348 8627.p44 [MPQS]

22 143- 3.7.67.79.353.2003.216395323.1176469537.
85107437663.64042071211885181234694097939.c124

22 145- 3.7.59.245411.88987603.120593021.
64052303668365610463.202265163810559697475821.p128

22 185- 3.7.245411.310727.92050451.360437561641.1886989139768881.
68888388258696674290956 1.379552191177534120431758 4693.c150

22 187- 3.7.67.239.353.22067.74729519.1176469537.176634767651.
219131812923768779.13244234881568847619.p174

22 88+ 17.3227992561.185827664336814818141511799216 33. [ECM]
23625835382859544987043550100993.p45 [MPQS]

22 94+ 5.97.3073108537.564965850338837336859999167744671622593.p76 [SNFS]

22 121+ 23.89.727.22481168623.230537266103.285451051007.
17441760483446212260356347 9.154564446706258259287551087737. [ECM]
17355367919972335849787673928 7.p39 [Sosnowski, MPQS]

22 127+ 23.543307.7634416214757200297933149.
17341722002391537830530298552683 1.p107 [ECM]

22 128+ 769.828673.257234246657.92444219894722671617.c132

22 135+ 19.23.31.463.631.3187.19801.144667.224071.
1066231.2581921.5966803.1850478481.2964868327.
5123015754307222951.1324657221380451112689431597 71.p68 [ECM]

22 136+ 17^2.158849.3227992561.55923475097612612881.
3386406398193800684960801.c122

22 140+ 41.73.113.281.3209.47041.3096409.305490121.240425214401.
472286706064064294087273.3749932998019858488545281.p98

22 158+ 5.97.317.749237.11505877.3365032531864667123 5021.
165828366495878492059275 97.40568756875201625125084884853.c118

22 162+ 5.37.97.157.1489.1621.18973.522289.25043041.5847988213.
18311943313.39960881485633.34012722647724902929.
27772314666918690636669709.90171097901784110695496201641.
12158679603837861848196568851579258786 1.p42 [Silverman, MPQS]

22 163+ 23.73351.168869.89007584860787662449775363 09.
139614033371849866426118855 77.c152

22 167+ 23.47979200665971646516978063.p198

22 170+ 5^2.97.181.401.108461.150901.33199981.
81665823661.40148810248988716318867981.
834364475696968461371578870905221215 37.c128

22 182+ 5.53.97.1093.4481.83273.498733.34379269.2468996151857.
2526873929581.144350581962862523737217.c168

22 188+ 73.3209.12565169.122330849.508497137.39758405194612786433.c204

23 123- 2.7.11.79.83.134337403.93437190589.
117018989947.2552453533436127567641913060 2983. [ECM]
3170181726986914027071055210668386854480 01.p59

23 131- 2.11.263.3931.742003717168625339.c154

23 149- 2.11.94255467205973.526232769311177.94673909021845160503.c153

23 161- 2.11.29.461.1289.5336717.831603031789.1920647391913.
3742676434518243293.1001467571939838919840 69.p139

23 181- 2.11.10499.119099.5078861.1823259337.1559915792243339742707.c199

23 185- 2.11.2221.292561.96048301.37977094891.1925658337781.
1280372289592306381.5713839242138307627889538424597962861.c157

23 187- 2.11^2.103.3689137.3937230404603.62246266355102810647.
3911962632250508024057754515 5927.c180 [ECM]

23 82+ 2.5.53.2590078215073.3680127367343989817844520007520137.p63 [ECM]

23 89+ 2^3.3.179.905322817433.1124628296466412249.
732179109196495881983693003027110 9.p54 [ECM]

23 95+ 2^3.3.31.41.211.493811.3195383.1970307281599.
77510480603188851674146978847977112084863541.p55 [SNFS]

23 100+ 2.2801.5081.139921.48760001.1206964869343609001.
414077744538237751206670960 1.
138073068495668316356820223 5401.p41 [MPQS]

23 110+ 2.5^2.53.61.941.272341.924209309.
1853387306082786629.31762382925417754855613941.p84

23 127+ 2^3.3.5843.209700347441606262885009823 7.c141

23 130+ 2.5^2.53.61.157.941.198901.272341.2861561.10747361.278640181.
880665761.3829141917458729.35157584639811369918784681.p84

23 134+ 2.5.53.271217.91539821368861.5007714160594678707701.
288752233283157320422528732 9.p112

23 135+ 2^3.3^4.13^2.31.41.151.163.211.271.1117.21601.189901.541119751.
35799017131.70648899716680111.10813836366311490442129 9.
264121602381250661783845115365366071901.p56 [SNFS]

23 139+ 2^3.3.313307.65334455492101.
4857534564864402151.65327773806059799851137 3.p126

23 142+ 2.5.53.3572461080739379537.c173

23 150+ 2.5^3.37.53.61.601.941.7549.19501.79561.272341.
960601.8233801.229533481.336449041.346924525001.
264629108413490722951560345879601. [SNFS]
870665932599544232398169965415873982 1.p61

23 152+ 2.17.3697.26449.623009.5164657.123153137.348307585094068529.
246514183186659126343016969100639 3.p125 [ECM]

23 157+ 2^3.3.11816097263.337702720730084363620479005 9.c174

23 160+ 2.257.265050271150614503512961.
731690865963406051359962533414721932030 3.c151

23 164+ 2.139921.23838755702749293353.
226229586553830909429285040321.p170 [ECM]

23 165+ 2^3.3^2.13^2.31.41.151.211.331.2971.6073.16831.20681.
44771.62701.174571.1573111.541119751.39700406579747.
890785539136914450283.52936348667191635547913334082458838672831.
513813898874516691293285383749954184306974 1.p47 [Sosnowski, MPQS]

23 167+ 2^3.3.189713.208931029.344079186209746139103770657.p186

23 174+ 2.5.37.53.929.7549.15313.3268417.3100568324560397237786557.
126725094252513447756318405872361567994184349156660896654176797l_
905137.c122

23 176+ 2.193.1588759175046890841 7.789922417927142541574554209.c191

23 179+ 2^3.3.1605631.413479586069853642797719.
252196991121191055263599853.c187

23 181+ 2^3.3.1087.490164849501331619.
123589472509955608765814324783.p196 [ECM]

24 79- 23.317.442243.19180727.413846919804499727099665581797563.p60 [SNFS]

24 89- 23.14921174492669807.261755490695291198774120959505377.p73 [ECM]

24 97- 23.4541347.692914476608954328063818246 41.
735188076230554847645434565498487568795271.p56 [Leyland, MPQS]

24 141- 23.283.601.1129.14759.497261.1216879633.
578020035794478063361780384263764059. [ECM]
108760633416615227888833321111707478 99. [MPQS]
373972466162827938145162312908092028633 1.p54

24 143- 23.53.67.6553.7349.15913.72931.6895253.
134367047.955530901779388654486865326 81.c132

24 147- 23.29.43.197.239.601.3529.28771.10426753.78066619.
9442346121566761873.125931208613032365313.
109572221574315102314989029523. [ECM]
375208401495468589864079420661814541.p65

24 149- 23.895486127.41082354174356606233363.
140926472046544370669335699 69.p145

24 151- 23.2429781824663.193894513435035694877999813.p169

24 155- 23.311.1613.9859.35279.39619.346201.4045774723.
9509803897151.592140654996503128448859067 21.c137

24 173- 23.122491267.4084781817071.767927496418037.
433383460719176894318425183 73.c174 [p+1]

24 181- 23.30047.2141593.37189709.2080072997.1584919006963.
270618412523761.8066607765349462192301.c173

24 73+ 5^2.439.10346579627319610501033522350 01.p67 [ECM]

24 79+ 5^2.23730124048998313.47712719059683445353810081439.p63
[Sosnowski, MPQS]

24 88+ 17.2801.359041.2311681.4306637281.
352398558777158391717917817933960310436 9.p56 [SNFS]

24 92+ 41953.331777.319450184013149177.
45331310252371925980635625850259009506593 93.p57 [SNFS]

24 94+ 577.112237.67702624698697.
10257513806599259131849124866323117004701266209920 13.p58 [SNFS]

24 97+ 5^2.389.311785405199908338937317426616432463795355989.p86 [SNFS]

24 109+ 5^2.2617.5233.365314740754468370000183256 1.
25288982524482034441820933473.p86

24 117+ 5^2.7.79.127.131.199.937.7561.33203.76831.
104911.304977817.45551103424587291624587 53.
51454920999271698053899658781380915299 3.p58 [SNFS]

24 125+ 5^5.11.151.251.5791.7951.86501.46739551.165634351.
14582512993821746567245 01.248298058857878344100916075 1.p84

24 135+ 5^3.7.11.31.79.127.199.271.3391.5791.7561.165511.1090681.
610250671.8065358187339042048961.69791470795817395704299 53.
11311614910972795771818188175522474706106108431.p49 [SNFS]

24 145+ 5^3.11.59.1451.5791.128236292537358704747981.
49621121640980349150940872635452 81.c132

24 149+ 5^2.10729.3537559.44283964082111678199481855 7.p168

24 153+ 5^2.7.79.103.127.199.409.919.7561.10133.36941239.131771863.
1585038487.11144891198810483.41468589759884807452879 27.
63853176863862732987234 73.30645083375139368791742188 87.
95234740388259590619180231 13.p42

24 155+ 5^3.11.5791.9289629982951807.4961274097599656671.
26339654168858637248912983.c147

24 163+ 5^2.653.33084012907345543883437661.p196

24 179+ 5^2.421009.50555643593054213219.120157856401645999161889.
68291459393926578463051567 9.c171

24 183+ 5^2.7.79.367.1831.8034799.93359647.977208959123.61357956800593.
1460314542488141.258726381313835460077428 9.
18719235505474846944247024 57.c136

26 83- 5^2.499.13042268984270514455201750010466 7.p82 [SNFS]

26 89- 5^2.4273.4451.9613.62701896248107043.10147432015661402599005968093.
10121130608730159353216770301723 3.p37 [MPQS]

26 123- 5^2.19.37.83.739.34687.2633923.2227332988104129559.
16571733132363756451749835121917. [ECM]
18892354714032401700241490238981476230887228035 99.p57

26 125- 5^5.11.751.4001.8641.295751.317701.2906801.4315817869647001.
200995607459028978625 01.57438122218874911035562 51.p82

26 137- 5^2.823.31237.8099750726687.74151977801274405936714294989.p144

26 139- 5^2.10009.788524269331.81514294090741512840 4457.p156

26 149- 5^2.6145991554660192133.c191

26 167- 5^2.104543.150301.189713.108709791613.2399503642587858615407.c188
[p+1]

26 76+ 17.26881.5548489897.25320232858838841728481328217.
875132981075359305809349703 3897.p33 [ECM]

26 82+ 677.70194953.40860181251913.
381702265806081503013263136197481066453577528 9.p47 [Sosnowski, MPQS]

26 88+ 3617.57734881.3150576863925041.32686478828986816881 11065921.
111329031641757174830582932466 41.p40 [MPQS]

26 91+ 3^3.71^2.937.6449.38299.59011.84449.397073.
427872997306845869083797772649612572 43.p60 [SNFS]

26 94+ 677.70877.84977.279309172406567423867201277577.p91 [ECM]

26 97+ 3^3.971.13831583853867062686286310340776049737988149125269.p84 [SNFS]

26 110+ 677.11518277.648056861.208518605101.2665780306333.
3156430211056541.131757569968530604264456923 4901.p68 [ECM]

26 111+ 3^4.7.31.149.223.42403.288823.64399463.
391090019766633062175083252136225148351.
582642089984028765228330689872990977783589.p51 [SNFS]

26 113+ 3^3.4973.6258167.2280927556467934805227.c127

26 114+ 181.677.2521.25841.386233.546289.5588281.
10675257997.317715361027301.18123838765142317.
257592061987243005339306048594 4933.p57 [ECM]

26 121+ 3^3.135938684703251.1889186782015561687 9121.c134

26 124+ 17.26881.63737.232129.105050918940131299016881.p137

26 129+ 3^4.7.31.681293.2932429.586305073577785199987 09689.
307681427875762258831762640 5309. [Boender, MPQS]
379451498124467263820861635713791153022115561468202207.p57

26 134+ 269.677.560357477401362324796065 8809.p157

26 138+ 181.277.677.1933.2393.2521.9010481.340173037.6516608335877.
17260057388236753.39828824696281012415045656159737 37. [ECM]
4655788845144039562923689719275077693.p63

26 142+ 677.2557.62275600616551341123576 77.c170

26 145+ 3^3.431.1021.93878453.240102311.2593018849727.
1646234613236561692 1.16464833459374627024064588951.p122

26 146+ 677.32413.507497.28368613610955680758942 13.c170

26 147+ 3^4.7^3.31.43.71^2.197.211.2647.42337.59011.341629.1560259846741.
23368004867873.9975798999400780813.947025675035594917082239 09.
10750683508672233267318675018 37. [MPQS]
11210087393134607574643165861674409.p40

26 158+ 677.2213.26861.331522942398670557688793.
10640485449601690125546893.c165

26 161+ 3^3.47.71^2.967.59011.1157729.22233779.378673381.629584013567417.
6152506204363975148981.3174495147477959027095423.c131

26 167+ 3^3.2339.14168340208944777191011 3.c209

26 176+ 353.101377.430164069753779201.2734035216446684476350113.c200

28 67- 3^3.396291497742359190868034104365335120 71.p58 [SNFS]

28 83- 3^3.167.39841.21661517621.
65642602122533083476691308195970252142124523.p58 [SNFS]

28 89- 3^3.11927.51977.1744291805022866555446841 77.p93

28 95- 3^3.637421.21084187.5504044949138999959.
1887651938076617581253466256 1.p76

28 117- 3^5.19^2.53.271.1483.1951.444979.219386077.360548139979.
4543753614603737.81923931656777716741.2441437589227959094240729.p69

28 145- 3^3.59.637421.279071175543028128073558728091. [ECM]
5825955098374730044896650289354732973 99.c133

28 151- 3^3.2417.6947.61609.12392588423.26991035025461754006311.c173

28 167- 3^3.153771283546887295553345637486169.c209 [ECM]

28 169- 3^3.53.1476047.4543753614603737.4700985788104603463580349.c195

28 175- 3^3.113.2521.15101.106801.206501.637421.4422461.5277241901.
6813064001.7984305701.30087331411201.
1042001872073101642759770 1.998857432420980248833670 81.p126

28 76+ 761.4561.614657.701915664419811894321721233008794537.p62 [SNFS]

28 82+ 5.157.2008673.
1290337223537687234724193799923100883188480512984035 7.p58 [SNFS]

28 86+ 5.157.173.62167681.28093161024366269350 9.
66144963616164787247355732648572 57.p58 [Sosnowski, MPQS]

28 88+ 17.87190577.22223646961.13553512906360241.
54500216412606918244888492927623690033 77.p52 [Sosnowski, MPQS]

28 94+ 5.157.667227655157479588397223589 3.
75764711938856160324817699082756442359519489.p62 [SNFS]

28 104+ 17.22223646961.19789341205087347551633.28350177141066368356891 3.
91273357564606780454199866731826402595476 9.p52 [Sosnowski, MPQS]

28 107+ 29.249636137.4043254583.15468214205115032095625543.
18503778979195526868860437 3.p84

28 114+ 5.13.157.229.15277.47221.10653073.4295845129.47560093775549.
5746048837796495176973.44759782454592457409650649228382743175133.p58
[SNFS]

28 134+ 5.157.269.18493.1810877.8790632089.
11112480612990130458797.32245332393952828598809.c124

28 135+ 11.29.37.109.127.163.757.1801.3061.3511.4621.6211.53951.102547.
208441.691651.7302331.25549561.84673681.2320484707.551640495331.
2714261904253.35936899856681417767154730992278018818 61.p49
[Boender, MPQS]

28 141+ 29.757.34687.40763101.175323719489.1892292333735833.
298377339269881902233 11.11193961815268113648003741481441. [ECM]
10794451258505794581848338245438995963581.p68

28 145+ 11.29^2.1451.40427.53951.1074509.245681335071811.8177803045607381.
15490614825662562881.25404189355843522469778697943.c110

28 156+ 313.7321.614657.51605161.45631002457.
601352884485289.5935493333359200313.
88644009606206514928833851 8033. [Boender, MPQS]
33983376413294503551894724209549 77.
85569357664121424881906127984819395 3.p63

28 164+ 2953.16729.614657.4003497693529.79939452679153.
2069388837704273.964703361819010275793.p162

28 170+ 5^2.61.137.157.1021.5101.14561.33049.
84961.412716481.12384607251106312764457801.
44939115327933976081073036773607531646 89.p145

28 174+ 5.13.157.233.349.5569.47221.282577.708359326721.
74139973370423190711076936413831 7. [ECM]
19048518175335748746037009367532568856946855016441696044225927517.
c121

28 176+ 97.353.1409.3169.453377.2012449.4338337.168542177.1113035644744321.
9322693790553541578049.632680277474052879831937.p156

29 83- 2^2.7.167.3252665332259655555600947881. [MPQS]
404571163175427835811278225306906842l.p55 [ECM]

29 89- 2^2.7.179.1069.27947.127383031.
45469633875737419437644163714815872297919545211 9.p64 [SNFS]

29 133- 2^2.7^2.1386659.88009573.82876670522336069.78885870548026497089.
157193380600163813309.27803846329711172800255346 9.
427796698062906085219506264336690793304149478 03.p49 [Sosnowski, MPQS]

29 143- 2^2.7.23.521.148123.139143863.542999029.4748492087.
18944890940537.454337435391434354040997.p135

29 149- 2^2.7.1689862939.167776773487.255444410634612137447.c176

29 67+ 2.3.5.14741.
173297930629746886212468111614816863.p58 [Sosnowski, MPQS]

29 88+ 2.17.881.26209.221233.289169.561377.
114376939073.219865111652190525263999132 9.p65 [Boender, MPQS]

29 94+ 2.421.7572077.1584493477649.
25766577171638128997515430785772027288775257233995642401.p61 [SNFS]

29 97+ 2.3.5.30755597.744742146864561670023378500890602 1.p100 [ECM]

29 98+ 2.421.2549.90749.427822081.826031641.
24540615452783140790846933661769 97. [ECM]
29293639650689248047370936489584278789.p43 [MPQS]

29 100+ 2.41.1601.1801.353641.41385415449401.6103563899172302171321.
20884552777295086520187668190830016696 01.p58 [SNFS]

29 107+ 2.3.5.9631.22922070202269578825419594436 87.p121 [ECM]

29 113+ 2.3.5.29200779933941393761.p145

29 128+ 2.10753.18669569.417436605125812561409.6558616462662643363073.c134

29 135+ 2.3^4.5^2.11.19.31.109.271.401.32491.2924209.5355451.10435069.
517475046481.220093795620430651.385306803907029054174231572 0851.
49607767221354949760529425844372362783518284 61.p53 [SNFS]

29 154+ 2.421.427822081.826031641.402546025333.
439165605149799397.641330052066768184396277.c152

29 157+ 2.3.5.3769.619265969062953883315353 97.c199

29 162+ 2.37.61.313.421.757.1621.4978801.15073706341.
467390730000853.42150482650323109.139720299243359448726920 53.
211057409971705855362818568229.c120

29 169+ 2.3.5.53.3407.7489.252918667.110216758731315469629888 97.p204

29 170+ 2.421.1061.138041.354553.1333141.470925821.3150122441.
10140056628101.19839562744788495091273332l.
176416285087852792172419157313795755429257.c128

29 173+ 2.3.5.6229.2000645359613.3868736097893.11482203825301015486879 7.c200 [p+1]

30 83- 29.997.1163.63247.172075933.
49247340228659957888187665782436041596421123405 9.p55 [SNFS]

30 71+ 31.19597.18380339.691438423192433150009235268969743986279845 7.p49 [SNFS]

30 76+ 241.3361.1412689.5264760313.
11204830911933608946458524398415400942545677 7.p47 [Boender, MPQS]

30 77+ 23.31.631.88793.1118041.279811489.
17166916282545620336047449302470386697 79.p50 [MPQS]

30 79+ 31.635852187045784830403209410660680328615487061812593459.p62 [SNFS]

30 85+ 11.31.613.7243.71261.565727.165849348647.
13879084661602908680705095 21.
55454095939477134268745068950 31.p37 [MPQS]

30 95+ 11.31.6271.71261.61799021.226758997.397645301.1653398801508051043.
80451911996934444483653727156040931.p52 [MPQS]

30 97+ 31.387613.3007583.44168893159.25851535569348409.
13154568574595865835254322 03.p76

31 83- 2.3.5.167.499.182933.40003511.74824336159.
51593443404264110239768071673.p65

31 71+ 2^5.10603709.
13319880092819199191122311225091584752844309632 51.p50 [SNFS]

33 83- 2^5.167.12119.113174458210280925641.
62240248962428001857409555240999533.p64 [ECM]

33 85- 2^5.31.39451.82723.113357.191251.1137388061.
50112366504728987716237814609284149850234291571.p51 [SNFS]

33 80+ 2.577.110720417.15480661570849.
14203459597125188840194153430478 41.p65 [SNFS]

33 82+ 2.5.109.284009142661.7661896603428145601.
57115137182696601515491005438579018107464654 9.p47 [Sosnowski, MPQS]

33 83+ 2.17.4483.462311.8550329.86898257160628663.
19375931289974516134431246596440916139294932 9.p48 [Sosnowski, MPQS]

33 85+ 2.17^2.34511.1151041.2334781.132345083573.
853299177421.24953692198916926106503511225790 1.p54

33 99+ 2.7.17.19.23.151.307.397.661.1871.221401.
2705341.658526221.34544013769.2052273058309.
87431823955119558803923514417516404354627 57.p46 [MPQS]

34 89- 3.11.23519364103.437596311967.37534001559883271.
2926045417685638187298003 23.46283251348636856120098537817443111.p36
[MPQS]

34 80+ 97.257.2583249857.49521227489.
76215347916929950054226775542587449971711741281.p52 [SNFS]

35 61- 2.17.2005847011022203920677223924210612017.p57 [SNFS]

35 71+ 2^2.3^2.853.20023.40471.185758106706331434155744721246081 83.p62
[SNFS]

35 88+ 2.113.449.22191649.45374737.53511862307201.
365054351555558532141715937.57786287944120850273333093 93.p48

35 98+ 2.197.613.305369.11056997307329.
25043150227481.72276240728021419876529.
26835114556660191634727829498531 97.p58 [ECM]

35 100+ 2.41.401.761.2441.3761.9601.61001.750313.781801.4598201.
932497340533001.131154945288623225790224096982 01.p67 [ECM]

37 85- 2^2.3^2.11.41.613.4271.332011.109172471.189475557532747.
37778062082442043734167 71.49613106519938851999239188427 91.p40 [MPQS]

37 79+ 2.19.317.75209.577807.25578015493.
98391963705690226265049739576326 37.p65 [ECM]

37 82+ 2.5.137.17802405001.10845656230655112050361336077.
94725615444232703865687947377.p59

37 88+ 2.17.19889.21679681.103308219233.13928651000075388261169.
65014691589286211719703764891270161 29.p55 [Sosnowski, MPQS]

38 68+ 41.50857.221402604391537457900971643 3.p74

38 71+ 3.13.2131.871597.56065861.836756511110294861230588355498 9.p63 [ECM]

38 80+ 2081.724481.1495297.71918657.175779617473.
78484946023258766765659099116528463880054081.p49 [SNFS]

38 98+ 5.17^2.197.1373.8233.1162253.34371149.
946768313.27192042949.212514297524367469.
31115654703918076322746404669234748693474369 37.p47 [Sosnowski, MPQS]

39 82+ 2.761.190903873.57581811927098514447067 49.p95

40 71- 3.13.2681387.3464416150905833951695693063 9.
14872389918842510337955913516 9.p49 [ECM]

40 85- 3.13.239.42841.2625641.331205867.556492509861557.
41785080380382301064480288601712795174601.p58 [SNFS]

40 91- 3.13^2.677.6917.109201.4201025641.282660734773.336226691642917469759.
91999196724651650939720522291405187981487l.p48 [Sosnowski, MPQS]

41 61- 2^3.5.484690689436903534351098581846709499724l059.p55 [SNFS]

41 97- 2^3.5.5821.4395653.1233535283345500229.
104121093355469740439891431 9.p100

41 87+ 2.3^2.7.547.2089.3372601998820898849.19933291665060545281860l.
35986713584166537135240400711440 97.p57 [SNFS]

41 88+ 2.17.353.3697.684289.954977.234850742033.15565580399398229377.
47284540205852491578926850100575688529.p55 [Sosnowski, MPQS]

42 71- 41.355427.7027723.59587686412940172440914 63.p77

42 97- 41.389.24381429986184461.461905321249903914114 67.
10796502783186066990920222 51.
17226761180341004526485947731719037932471.p47 [MPQS]

42 99- 13.19.41.139.859.991.2971.4159.22120957.279039619.
288900307.528128833.5942675707.2249714066623.
23437309093413719343442610084173 9.p55 [ECM]

42 62+ 5.353.27653.4947196423396642966182984831168841.p60 [SNFS]

42 82+ 5.353.81094229.131135713.4567617291613526417288775 7.
16024645622073417003737387629797344723447 89.p46 [MPQS]

42 100+ 17.183041.51536026081.329713535414201.
1819187987193361.114919215143967827647801.
31752483120948596395270589161330800 1.p57 [Boender, MPQS]

43 73- 2.3.7.877.862861.1107015494933731.
27400250238443652984127900619504352 07.p58 [Boender, MPQS]

43 77- 2.3.7^2.3389.5839.158341.6038099.16079911.3664405207.
13251419277365940068649346866811244245818 71.p46 [MPQS]

43 82+ 2.5^2.37.164821.18263713885240954063501.
57975563452625892625211 3.13250513916267303741603576 1.p54

43 95+ 2^2.11.3341101.44604967216104029227868681.
335824220934205345938760197 1.24685843962864583215700669740 7.p65

44 64+ 11079795073.199974339049953658695427683202571769 61.p58 [SNFS]

44 73+ 3^2.5.3943.474522246326451452191043632753.p86 [ECM]

44 92+ 41.113.809.764521.99634933986389571835743 53.c114

44 96+ 193.257.2516929.156935873.22985231403362324589062757973633. [ECM]
96567346206389328432642249686234970552121 7.p66

45 71- 2^2.11.7472046391.1741283218483835774860241041727651. [MPQS]
20151644909773645339992751665547 91.p40 [ECM]

45 71+ 2.23.40241381.139882582263531512722 7.
69229816187403473081388 1603.p61 [Boender, MPQS]

45 74+ 2.1013.329597.1106065083565957.
10032371280778007847201851347 4053.p67 [ECM]

45 85+ 2.23.41.19381.97841.6498761.92116201.29335436267.9428928689731043.
21813609048506892097506062574002 0221.p52 [Boender, MPQS]

45 91+ 2.23.43.2003.20021.419147.2529229.7833827.143001769.188912767.
13314833663.7881861395102904446769119739881087904 1.p57
[Sosnowski, MPQS]
45 95+ 2.23.41.1483.3041.12161.62549.97841.2140807.2820596041428749.
8382503589639137741.4953699481889817889050678 1.
52980497255362992476044221547921.p36 [Boender, MPQS]

45 96+ 2.193.5953.9601.94163429485220072478209.
42451024689370957377428951865 7.
42743402819930190654363062498824998337.p59 [SNFS]

46 85- 3^2.5^2.1361.6971.915391.30186481811242087783626 7.
21908282623164147275301027791.p75

46 87- 3^3.5.7.59.103.233.1451.34511.1140571.2191067.38921547036517.
628182688864723.19842826818257138193686710 3.p61

46 61+ 47.3539.155992007.18683396789960768890997894543901691.p54
[Sosnowski, MPQS]
46 64+ 944257.52208711297.68061758513934235656711962645984723 21.p53
[Sosnowski, MPQS]
46 74+ 29.73.593.231966568606209343486033.
71939950774050823483813371317 4697.p61 [ECM]

46 76+ 4477457.184415977.76469972875614001.
11634399768179201435279248951093810 09.p59 [ECM]

46 83+ 47.167.5290997679928621.2220038272947769543.
37503957320157479721249 53.p76

46 96+ 257.983617.1569884896100468417.50024873412652493812993.
40035907701269218528290166325 4593.p78

46 100+ 21401.4477457.89546397155401.742909680541377001.
40190666643978830151082776 1.26776391935349575185508576 01.p70

47 61- 2.23.367.595113241046123048978105380157595798537541244588 3.p49 [SNFS]

47 99- 2.19.23.37.61.67.199.397.134707.567332587.
398959160491.40415365692967152312532562522827.
33679057178642441228217793756049955131374 39.p53 [SNFS]

47 62+ 2.5.13.17.22482471302480302698156269651993834317 7.p62 [SNFS]

47 67+ 2^4.3.11257.47029924391.172078682701093583318186294509 9.p66 [ECM]

47 89+ 2^4.3.32427010358928132535801853.c122

48 77- 23.47.71.2003.39359.175926983.73245991369.
1262544400324239186728438348998301316450968 3.p55 [SNFS]

48 74+ 5.149.461.17761.9717733520501.119369915421989.
1803178175637251457772878877114 1.p57 [Boender, MPQS]

48 96+ 4673.1199617.31441217.68959937.828140161.
6223398501280169399179508102480224 1.
2135386457879183065770716055060813976435 3.p53 [SNFS]

50 71- 7^2.5403527.671591881637864806170507851023.p83 [ECM]

50 100+ 97.401.64433.2839601.617094241.2472683361356169361.
13964138185429676801.3130301176043718124801.
589514788785130719305008867620773920776 01.p46 [MPQS]

51 97- 2.5^2.1418701631.63710052364417875162160213.c129

51 59+ 2^2.13.827.3863911.691360432625522722369571736289474332 7.p53 [ECM]

51 74+ 2.149.1301.5883593.10160439842909796023929.
3501110793415425414359306438542 9.p61 [ECM]

51 95+ 2^2.11.13.2053.30553.603191.44986295546960311.
42615522890084351283911.8518972038822084526513 9.p84

52 99- 3^3.17.23.127.199.919.991.15401.52363.229681.8528257.
416092460939.10298731066589776270496061114177 1.
2865181441342519072125806270880926776 33.p53 [SNFS]

52 71+ 53.1279.41039.24102371.270238564019.
3746926735374289394942389452776181894875897 11.p50 [Boender, MPQS]

52 94+ 5.541.941.117877.216577.215605283910372704706285565 7.c118

53 61- 2^2.13.485261705031324908129337140555577673056954 7.p61 [SNFS]

53 67- 2^2.13.269.83617.1489178467287961.
3171028430391219726945033882304501 1.p57 [Sosnowski, MPQS]

53 77- 2^2.13.29.778986167.178250690949465223.
3035491886009216601162492626 57.p74 [ECM]

53 85- 2^2.11.13.131.647.4013.5581.12479.56611.
121936356626073149.25311957625039355457478901 51.p79

53 99- 2^2.7.13.37.163.199.307.409.1321.11971.20570149513.
269718965012113.84223538018565793.178250690949465223.
3437450863391836147928455490511196038259.p52 [SNFS]

53 61+ 2.3^3.819477821712540318113292584632090125085140569 9.p58 [SNFS]

53 68+ 2.17^2.137.232073.1800249897937073442773782 81.
178721228803728051470554745 21.p53 [MPQS]

53 87+ 2.3^4.919.1451.490892861.5413724873.484681171446047408654466607.
234354884299243234614370779650663 71.p63 [ECM]

53 97+ 2.3^3.563183.30513874662348102827.612610199451692773750494 89.c115

54 73- 53.293.1294583.80107501483.19488327970343.
401187816477484553819484076222663224681 7.p53 [Sosnowski, MPQS]

54 83- 53.167.499.31873.37695892873.459466997079191436847347287.p96

54 87- 53.2971.3466267049821960127683.944672224867817403186831457.
102240083691764449389233813354638137672 1.p58 [SNFS]

54 77+ 5.11^2.24344094727.18818109157530101.
208385831423510460006216805877.p75 [ECM]

54 85+ 5^2.11.31.53861.1236751.4988311.34520881.73876707391.
831946569404767.469695843177764886244502741459641.p60 [Boender, MPQS]

54 87+ 5.7.11.59.409.8353.7837831.421422699282677.
161916278825284924934713032 91772129062333304451022144511.p64 [SNFS]

54 88+ 17.14593.291444977.339438353.46343916961.
319199382833.761026466399244591314209024 33.p80

55 59- 2.3^3.784892457447636745525091028006607964 3.p65 [SNFS]

55 79- 2.3^3.65390411266245619112083669.
115472320328759447504877478705 21.p79 [ECM]

55 97+ 2^3.7.971.400688343121679087.262031471064829119076399.p124

55 99+ 2^3.7.199.523.991.2971.53407.4011349.62017050679.35206995457482949.
211850315928336517857741692465101. [Boender, MPQS]
328264138663207046314460904950119.p56

56 67- 5.11.3217.1743341.432194395365533.268112591128952866272537850 13.p63
[Sosnowski, MPQS]

56 71- 5.11.569.26981.1083319.592743440848495855535632354 7.
361400656576360583581797994266 41.p50 [ECM]

56 61+ 3.19.195085321.313013973674528806447740942428450206098 37.p57 [SNFS]

56 73+ 3.19.272635116762681427742303.951830106519677341570849.
747420472582490132604522853.p52

57 93- 2^3.7.3307.19191047.21371153.531143217997013.
221714571034941108561629.685923035473661142119620979260 3.p75 [ECM]

57 62+ 2.5^3.13.1117.5953.189251580701.133571584066375907171 6954746461.p58 [ECM]

57 85+ 2.11.29.943091.18510511507.659213561132871643.
878401685554131551.119129921907894749159582050 31.p67

57 87+ 2.29^2.31.103.349.1451.7369249.145584139403.495845451083057.
4725165384046012189.654672215113572972041106754082060034 49.p52 [ECM]

57 94+ 2.5^3.13.82280501880281633346638513.c136

58 79- 3.19.8059.181378493467736388058632 8633.
312814999983629303099967 0163.p79

58 85+ 31.59.1531.358861.687481.15921744571.161221842059099007340349258 11.
672310621784972434879468767739701625891.p55 [Boender, MPQS]

58 95+ 31.59.191.761.8741.162641.358861.392351.1366367.
396928699746707188253913 41.371393714172351394384480517 71.p79

59 61+ 2^2.3.5.13704637157753956631232632674017377931103330363 57.p59 [SNFS]

59 73+ 2^2.3.5.324997.5672977.21337222769419919.
352382164864788409306246922367 07.p68 [ECM]

59 76+ 2.17.593.601.2129.204137.1717620521.55146832167601624311550593 7.p83

59 86+ 2.173.1741.72732473248596877013873103140 9.c117 [ECM]

59 96+ 2.65365883837475841.24056131538755401200492 9.
966069980372748203456321181344129.
112033259848657589216800573335450797043439449849 7.p49 [SNFS]

60 83- 59.108939023416285082711057554261.c117 [ECM]

60 67+ 61.2011.4021.383777.507637356157067129681448280 7.p78

60 73+ 61.627947.6148322021647170019.
441965915794536896362195849621.p74 [ECM]

60 82+ 13.277.821.148913.376946812491795769.
119042380600861468461354559894684 9.p84 [ECM]

60 96+ 193.577.3282554255489900161.
660714547789485909121608735695087010700910227 3. [Boender, MPQS]
506149053486863251114544242681893930318723475 21.p55

61 71- 2^2.3.5.2557.127348179520374878846010667.p96

61 93- 2^2.3^2.5.13.97.1489.3861547.2861180527.
421734818409818840725904362 9. [Sosnowski, MPQS]
247844301073446432073571189153011918514923282850779.p64

61 59+ 2.31.211361430555112433644140492656410 1.p71 [SNFS]

61 73+ 2.31.293.418695996146203570987053982 73.c98

61 86+ 2.173.1033.1549.1861.744327119102324603336237.
4703971765665565776958936 4333.p89

61 87+ 2.7.31.59.523.21634145059.975296274233.770983727124786406046204 17.
189358238545673126362152975376595926357672 99.p57 [SNFS]

62 85- 61.15018571.127040980157119921.484539164889026077691201067 31.
820327481111405584388625697567090631.p62 [ECM]

62 65+ 3^2.7.11.53.1321981.785577209.76258220923.
143910692290252284248411015544 4391.p53 [MPQS]

62 68+ 137.761.953.19417.945473.112325460754778202756532168878097.p72 [ECM]

62 85+ 3^2.7.11.3571.1321981.8407283.370133198381454511.
5580363705828189024517.489653426037858561690542 41.p68

62 87+ 3^3.7.13.97.523.7888117.
415558613279934324305475545270348569 3. [SNFS]
151362553600716695715284841780511649821990883946431.p55

62 91+ 3^2.7^2.29.53.617.446293.785577209.76258220923.
317450525696892148852019.c106

63 71- 2.31.569.1033132809744389.192842299586274778755917859729221. [ECM]
152546360864092255256690603984839056 11.p39 [MPQS]

63 64+ 2.3457.124521671429508648593273054966748576834317626270402 57.p60
[SNFS]

63 65+ 2^6.11.599.701.2011.18617.29017.11892088651.
108410889974425685059575647391841055155451.p46 [MPQS]

63 74+ 2.5.397.3257.199257064921198287206104278941 81.p95 [ECM]

65 61- 2^6.8053.41603384885460672520102041611 39. [MPQS]
398477461889607377410150529800824666 7.p38 [ECM]

65 67- 2^6.72976669.69446407777871664604638267 7.
233810433880025079395885504567305 79.p51 [ECM]

65 81- 2^6.7.163^2.181.613.7489.55639.2054369413.7859350738601913583.
164238217490946482645185353969637125209713.p57 [SNFS]

65 87- 2^6.7.613.25057.781580759075996744925655203226517168419396 3. [SNFS]
586553146232068395470571577233998687006533145904541.p55

65 99- 2^6.7.67.181.199.613.991.7489.55639.2177891.649822339.
2469987829.627813729401.83920512957403.320271832458540271.
500567978195823494381606903 71.p60

65 59+ 2.3.11.10275788306157161273436486435202681034320 7.p65 [SNFS]

65 61+ 2.3.11.977.12323.278931665168993.
98440618276598130692514027414739 63.p54 [Sosnowski, MPQS]

65 77+ 2.3.11^2.23.43.701.727.2003.2464127.28109929.7208552329331.
22252405944001877365115999238 49.p68 [ECM]

66 59- 5.13.365917581565049948357034446004439264548937346230 1.p57 [SNFS]

66 91- 5.13^2.53.5851.86269.88661.86865143.230001773.
19407779977.83925549247.33085579281206007557.
21798740818949862059062742703701023601.p53 [Boender, MPQS]

66 67+ 67^2.36583.2426709449.106061207924771264406391812 11.p77

66 82+ 4357.9677.53525009.2700500917.1301324841374549.9348538592843621.
41300092302841597706556775634365 3.p61 [Boender, MPQS]

66 93+ 7.67.613.320851.5353729141.70312277084329751.1485374232337453697.
36384813275620096333.40151808672448666723509215523739141.p60 [SNFS]

66 96+ 193.2029697.2774273.11968961.959272198081.3654020219713.
2397095323852609.25991253355648831816667 1617.
15305573224803904178699920783745927027 0017.p46

67 73- 2.3.11.22777.2280119459951.23601123952678441933058156584 7.p86 [ECM]

67 79- 2.3.11.317.835021633144508463676667 1253.
12062513735580130277622374848 1.p83 [ECM]

67 73+ 2^2.17.293.12703.711751.902170063.500933537872094339711.
69415692722881318336930198596728941663 9.p51 [Sosnowski, MPQS]

67 92+ 2.937.10753.28783604775360000812946847033759 3.c129 [ECM]

67 100+ 2.41.281.937.2281.10753.53401.5022387641.1249312628801.
1849012040801206840001.51765995078343111426420 1.
54178496944640877192809401.p71

68 81- 13.19^2.67.127.104704543.778486591.92298555263287034804515 51.
36128237852657466120477865781025 1.p67 [SNFS]

68 91- 53.67.1249.25117.100343116693.170431883140247.
149865875282636033.17011895482001054353981607 9.
13227361529818844607432242535362 3.p55 [ECM]

68 72+ 881.7928257.8657041.518914006417.3045056878967473.
10795140233926624056005421986037151645469281.p45 [Boender, MPQS]

68 73+ 3.23.293.6863.17959.17087549.208175655199592373073480384 0709. [ECM]
35730305209941291544460960991689189921.p47 [MPQS]

68 77+ 3.23.8009.103867.222707.938071.
9354381575551.55929669802649015170648636633.p78

68 79+ 3.23.195131.9376669.3724666879.13041535285987896419609450977.p93

68 80+ 257.3169.6337.9377.39041.395873.10908969697.
55076028663259631750646241.78462988123551619569673218721.p59

68 94+ 5^3.37.1693.5077.2779613206817.
380078097878729089724093560602243163421.c111 [ECM]

68 99+ 3^3.7^2.23.31.199.1567.2251.9343.17623.222707.9146508645979.
9354381575551.438677597482147.28130785583326229497.
55811379859723650219189208160660907071 41.p54 [Sosnowski, MPQS]

69 59- 2^2.17.6373.4785508421689.
32847958232527059163522256185773436421983.p50 [Boender, MPQS]

69 59+ 2.5.7.57750828548078501309346839.p81

69 62+ 2.2381.436175017964804309413040793724058854633552 21.p67 [SNFS]

70 86+ 13^2.29.173.7211273.9758249.24808836757.
66889173621755598432057653.c103

70 100+ 17.41.353.4001.18521.43036001.384117521.817181201.1091818001.
1991672947001.1139347533020321.48723491541173889002158 01.p86

71 85- 2.5^2.7.11.211.239.1021.2221.22441.2765731.
3652120847.18907238869751.484563667343825089.
97973645647708112223965093882873412347385 1.p50 [Sosnowski, MPQS]

71 61+ 2^3.3^2.6210167.435557498904066981458931931144709002532 9.p65 [SNFS]

71 62+ 2.2521.3188215957.309668615895174932482121120151281 33.p68 [SNFS]

71 68+ 2.137.1361.12705841.38865938521252828731950 41.
35689934650774260239529049.21612728605083115823679465 77.p36

71 93+ 2^3.3^3.373.1657.1861.146197.7785341.428052589.
44644804372944202238144448475582460291772601 03. [Sosnowski, MPQS]
62217440220232889249682010704747503024849291 83.p49

71 96+ 2.193.449.94273.32285555713.
65848868456257.13149004855468262000586049.
15236499328721402297859160792300870971329.p78

71 99+ 2^3.3^4.19.73.109.199.419.1657.3169.5479.282439.3596143.
1398279582151.5278680713430981253.94293274239807593813478 3103.
52634671765546571751446556069 6109.p58 [Boender, MPQS]

72 59- 71.10851680403094458213456260766151004697489402667841 6959.p55 [SNFS]

72 77- 23.71.2663.35311.1970431.2123969.5150377.1755456583.
141276239497.86612638895744751526418 23.p68 [Sosnowski, MPQS]

72 85- 71.103.137.401.67961.28674071.114320887.2559724681.7953366871.
327876819251626913.60235600716365145529280152391.p64
[Sosnowski, MPQS]

72 99- 7.23.71.199.751.937.2663.6007.35311.148681369.1755456583.
932972949486271.230101427274889574527332202287 8.
280426857592125515751808317788128644 7.p58 [ECM]

72 61+ 73.977.5003.7647571.5609190707.
105870350989766503509919213781978455278377.p48 [Sosnowski, MPQS]

72 67+ 73.1609.21059296095793.175366593905589379945002288607699.p74 [ECM]

72 96+ 1292550913.657671635183781060737.193918243873688880490624 1.
140288223687676765343241716605217537.
641922876737073637943598911547672550657.p51 [Boender, MPQS]

72 99+ 19.67.73.331.5113.83227.173779.486091.3810643.7332299803.
71053418846071201.604263212814371419.41650089165773041339.
809754078916899091068658884 1.p59

73 61- 2^3.3^2.11016601.73273201.545986967.
59852249654672900127557971920967242935 63.p49 [Sosnowski, MPQS]

73 59+ 2.37.1889.440274128285903.352460216963149254177908054137.p61 [ECM]

73 64+ 2.20353.190766197273174671944412 17.
988272925278092417415910908741922858992257.p48 [Sosnowski, MPQS]

73 70+ 2.5^2.13.29.41.2281.70697833061.789577628516184179813.
216690827849997756674146934116159409777549 81.p47 [Sosnowski, MPQS]

73 100+ 2.401.9601.12841.20681.8293801.14199121.41568481.
18166883641801.58915722956081.13872830645843382401.
190605828596858636892096880 1.693615250944204429528608640 1.p49

74 81- 7.13.19.61.73.163.541.3511.3889.4861.
9829.10369.833491.60981146098455317671.
270554560899213544326620095689884005478668783.p51 [SNFS]

74 83- 73.499.997.44987.495811821756488676744719.p120

74 61+ 3.5^2.1831.1319464216408409.
402001148850489151560048004004533552333309.p53 [Boender, MPQS]

74 62+ 373.5477.64109.80694050777.
915333016200347399794251755295072459 11461.p53 [Boender, MPQS]

74 73+ 3.5^2.20549521735986883827510748 3.c109

74 87+ 3^2.5^2.1567.1801.46426739.864136723.
25742829157.114859033579355691965312658708 19.
768852409453219370000984120575417 9.p62 [SNFS]

75 59- 2.37.709.259509739762130824043197731927949.p74 [ECM]

75 61- 2.37.10577869747496369468432670661 3. [ECM]
1247865814900558615985353928829 7.p53 [Boender, MPQS]

75 71- 2.37.853.19597.369266776211.574250151443.
2776436695056259679329573 69.p75

75 87- 2.37.59.1451.5701.2967397.88211041.
2532125499534746983155956600254 9. [SNFS]
1266630207745013652046439134283324314542 37.p66

75 99- 2.23.37.73.109.397.5701.35509.22367593.6988370143943.
13539296575333.8783850209288999272994982517 3.
1532636136861107964962437282215 7. [MPQS]
4407214451357202359773213044931881241.p38

75 62+ 2.29.97.89071681.5068024236453793.
34841048373053579957355999266817561484099801.p46 [Sosnowski, MPQS]

75 68+ 2.137.1153.13721.680811475905485439280313.
1222371297395451095322528515520 1.p63 [ECM]

75 74+ 2.29.97.149.553249349511183046537606 1.p109

75 97+ 2^2.19.7425157.168429029639795266289013 1.c149

75 100+ 2.41.1153.4801.7681.13721.2715601001.1795164084001.
1171959539982481.501724472382892705608211025614 01.c103 [ECM]

76 59- 3.5^2.33749.799915101653875376990997785749211 69.p70 [SNFS]

76 61- 3.5^2.733.46283794026575655105654268367943695317687757.p67 [SNFS]

76 67- 3.5^2.3217.11257.6261333179.4410778174387831.
2322399160663216040606130654047566633978337.p49 [Sosnowski, MPQS]

76 85- 3.5^3.71.103.3571.5101.95231.10443351091.
14313296269.238453153189661.28486762604088891864772 81.
2940333370580725865223767506937656 1.p48 [Silverman, MPQS]

76 93- 3^2.5^2.683.1951.6252019.8972965400127301.
4257921088587343041001099.70272129000365005536804943461 53.
8287824374339808654959347995907.p58 [ECM]

76 95- 3.5^3.71.1217.12541.95231.1332281.87382901.180770561.
356597594732639975017.92295857128865317900640422901.p91

76 71+ 7.11.22721.25561.1838191.2623451.924377632713593746905 83.
4642988497064854736038874130612 1.p56 [ECM]

76 80+ 40733403041.37174947364590401.64002003085256925597679744 1.
1238846438084943599707227160577.p67

76 81+ 7.11.163.5701.255709.753589.3118933.18506036503531.
123972454876087.1234426996450807135121057801950 9.p69 [ECM]

76 83+ 7.11.4799227.112353045264782237715746 53.p123

76 99+ 7.11^2.23.199.397.2113.5701.13399.21319.255709.324391.753589.
1871827750783.21356451994214503.1439991039330765703 4587.
383879298948720283198084 33.339586324034732476900679079523.p39 [MPQS]

77 67- 2^2.19.204887.7827343.726543441701070084438822 49.
750249432448441493737051262430131557158 53.p46 [MPQS]

77 91- 2^2.19.53.757.911.1249.47861659.278949511.13891200467.
1365056329785331093.963745516044660410392241.
178060880414682418032557913592267.p59 [Boender, MPQS]

77 59+ 2.3.13.652091796646574597430142321992743.p77 [ECM]

77 61+ 2.3.13.353085322903.450077616693990477664701291687343638233 77.p61
[SNFS]
77 87+ 2.3^2.13.59.1951.5569.9049.
164230856126968414858622210589961040563267 99. [SNFS]
110990144208223500724574649416152310756261610711 4219.p55

77 94+ 2.5.593.812336533.91236456717695749.3183260878416438872459053.c124

78 85- 7.11.31.41.1021.1259.29501.18354731.
431789418410238821.151039935139918067810604740 9.
221991811077158863444276162821 1.p63 [Boender, MPQS]

78 95- 7.11.31.41.191.29501.25131669779.71888587949.6403618168573.
211328169182916694187925661.111505405111605928569322929 1.
173249161578492981363915957459146111 51.p44 [Silverman, MPQS]

78 64+ 30537217.257707816971959701395037531875654908516033404413313.p64
[SNFS]
78 67+ 79.744374581718818899085247 9.p101

78 76+ 5449.6793.304457.22941361.247953412441997361658901935 3.c96

78 83+ 79.167.499.582810773713579.150380217191750485075768 3.c112

78 97+ 79.1553.257818782093494735507687.p156

79 59- 2.3.13.2398224663172169589462317327048157155309893265828880 47.p57
[SNFS]
79 67+ 2^4.5.269.26399.2267605621.96503759683101219562269977.p84

79 85+ 2^4.5^2.11.641.1021.1091.6786673.325859231.665756982311.
1027740834619199.865090720594618872232861221 1.p79

79 86+ 2.173.3121.410393.668221.1830253.154770761.20958563609.
29736112673.105972000877474558577693.480700950764217506055378017.
120754604263053094256076976072 1.p31 [ECM]

79 87+ 2^4.5.523.1103.1277.6163.3251275211497390930699951849.
95351877918169911049090213995956089145248231279.p77

79 89+ 2^4.5.179.33613577057864838382915 87.c141

79 92+ 2.41.433.1097.458569358653639477695668395810 01.p136 [ECM]

80 59- 79.235499205169.581053099699.
111405804490660835245987931898137243027 71.p48 [Sosnowski, MPQS]

80 61- 79.37699.57250710187259.879095438136675753491744582549161499407 9.p56 [SNFS]

80 87- 59.79.6481.191509164991.11463232291481.
1756859276009281909.151228576457429416585693462 9.
859326402732454200656781282952493260641 1.p49 [MPQS]

80 59+ 3^4.3575166411141678304521033155603392082808527.p68 [SNFS]

80 64+ 3457.248321473206646100320983984249369 61.p84 [SNFS]

80 79+ 3^4.1423.284243.34642370107.24430398460903.10412036168352858409.
125033346555911814359392237572903396 1.p61 [ECM]

82 87- 3^5.2269.5279.424909.2165663.3278741.73130983.
37918241695011857.275054566477983516899.
164031523367099304606689883844719599983 69.p54 [SNFS]

82 99- 3^6.19.23.67.397.2269.40357.132157.3163051.52964803.2854687177.
67789538587.2983406354409757.625513362079645065339 07.
452784133685845094969261455471150847006 23.p54 [Boender, MPQS]

82 61+ 83.1373272557803015990137.952244913114948692144371343582239 3.p60 [Boender, MPQS]

82 77+ 43.83.463.727.38669.180629.359129.18678408660030109.
73947412440553807.524201504421993849592241207464557896081.p52 [ECM]

82 91+ 43.53.83.157.38669.180629.899159.12203656388509.
6551045825238966871.16582022129542741900757.
330700493745445595352362783.3546829223337777318835309293.p42

82 95+ 83.191.761.224467.233861.361001.6039368947831.24546142046051.
58206431101631.16249797147547747514399228 9.
17951088910565364218680151263951 1.p61 [ECM]

83 61- 2.41.111143.47473373.4076007230995222788604962924130 79.p70 [SNFS]

83 81- 2.19.37.41.163.271.367.64153.137737.
4840642297.16130391679.2663994847961883844189 9.
56592790644796451614590992165526130506373 21.p49 [Sosnowski, MPQS]

83 87- 2.19.41.367.62351.63512437.500805747488153.
44869890892931846869.2767447060179892910385604 51.
365476334766968847915520389021718332121.p50 [Boender, MPQS]

83 93- 2.19.41.311.367.373.2304727.461587317509.279371903335515607.
37936859671170021794 53.6942747590923921265779.
1815288698418717720898184949177342403388 89.p48 [MPQS]

83 68+ 2.17^2.73.137.19121.190537.1032649.
1107335102245947893129735919 2137. [ECM]
4072457835695333858515331263995 77.p45 [ECM]

83 71+ 2^2.3.7.3543183809806621.48386572774554953092559.
3080503308187762514775400 37.p70

83 82+ 2.5.13.53.91150528890388910981473811886445 3.c121 [ECM]

83 99+ 2^2.3^3.7.23.199.397.2269.49339.2208799.6050749.19951801.
263705707.475382359.33409485649.1932813863851021141.
8052882142749567366796831 31563. [ECM]
9854033377748948189318130259599 37.p44 [MPQS]

84 59- 83.8192033.1172636671631922803.
1177954801912230280832892080832 7631.p53 [MPQS]

84 61- 83.7687.319031.13616543.
3692162441408467527934061124012362468229982 4503.p53 [SNFS]

84 95- 83.101.498881.2078753.27643481.20436490956722362771.
4983787728827217871990 81.2110694866162091556467380 7237.
1049631751848998133065559533968191981796 1.p49 [MPQS]

84 59+ 5.17.827.59930992322753550684360212361021184870203774708 29.p60 [SNFS]

84 61+ 5.17.1171432225361160553687402089 91. [ECM]
2469959482724715119401314411079.p56 [ECM]

84 67+ 5.17.269.20101^2.62195393252374606519233947989.p88

84 68+ 137.409.953.2089.23833.56320321.
9086516830114660050787133526 5041. [MPQS]
1654393565685215044205839934950153.p43 [ECM]

84 74+ 149.593.7057.17021.43661.1790357.7058139207219048249991229.
1442109725607291598960001512861.p64 [Sosnowski, MPQS]

84 84+ 1753.2089.23833.213097.6635521.
5606259588294707185980624578214771954456599521. [SNFS]
1523010357219396329533818283175625074040643 9681.p47

84 85+ 5^2.11.17^2.271.3301.8501.1544648568312836121279733 0891.
3571741467811446575398224758 21.
1498624429381598388870249300325925610506334001.p46 [Sosnowski, MPQS]

84 86+ 7057.10124149706689.94802551705369.4041807485771491393 08721.
5040702901796580708849643132 2349.p80 [ECM]

84 87+ 5.17.19.367.17053.1433239.2836419522403.
55503771468787516206096601405909. [ECM]
184327989821345750579314631677436857.p72

84 91+ 5.17.214943.347165113597.121958421052367004564733.
25319866913600717777100 61.10817574491612792998845 9877.p83

85 79- 2^2.3.7.81371.1156403.1358557327327.1393496053232525009.
9480397380823853359.216772993252116719166641862980975 1973.p54
[Boender, MPQS]

85 83- 2^2.3.7.167.361814610682033699818013.c133

85 93- 2^2.3^2.7.2437.3907.65953369.215044087.35371738252465399.
78225256695150445440186176 17.84717008627891657240137703878 3.p80

85 95- 2^2.3.7.191.10831.52822061.1434642691.18887745911.
35601922171400092091.54285057541336632875522658938453311.
15283788002142404768051251143579322587259631.p51 [Boender, MPQS]

85 62+ 2.3613.114817602636450803964959791376220732247755587876882311 3.p62
[SNFS]

85 65+ 2.11.31.43.71.131.2131.5851.873419.942709.170744724671.
46451766241031011442385934677060897884 81.p48 [Boender, MPQS]

85 81+ 2.37.43.193.379.397.3727.949997233.6845679793.
115084855621.179666329123.12195021868495583284729459.
29011724059515468798399365291931 1.p44 [MPQS]

85 87+ 2.37.43.193.233.694261.315104845339.78756221680764157147134 13.
21443430851939471822215541392 9893307. [MPQS]
21208230387511525897652605520909603 89.p46

85 91+ 2.43.113.873419.942709.3298796957.170744724671.
58121572576262710400851311347.35882762518899347814064471041 7.p81
[ECM]

85 100+ 2.41.337.601.1889.25053016721.493137810780545081.
24215742276527455609953001.p129

86 59- 5.17.827.67481982753786888925012865153378629169.p72 [SNFS]

86 61- 5.17.120584935766678683205608331440427931843589 73.p73 [SNFS]

86 79- 5.17.48668933647032565388177 87.c127

86 81- 5.7.17.37.1069.6481.7561.6035473.
10934266789.875775687082278480502332639199 3.
26159906255623634539093561396 1983.p62 [SNFS]

86 95- 5^2.11.17.191.281.647.3581.7829.9463.1033601.4001743.
37835537.222067441.9231305801.849796360257521.122072714432103011.
10987872704490880988770 01.10709502973906680702572107 01.p40

86 99- 5.7.17.37.67.199.1069.39417643.10934266789.277302580894747.
22390512687494871811.72246261615962894516397718820247599 53.
15822483122045246971115787776981038996741.p52 [Sosnowski, MPQS]

86 59+ 3.29.75789538556426804515311810220366845429473 11.p70 [SNFS]

86 62+ 13.569.27548487029394661655951243615 3. [ECM]
337592264696855713753782405487974 49.p53 [Boender, MPQS]

86 64+ 7890087883451064546860060876000494981405683163776536 7937.p68 [SNFS]

86 67+ 3.29.3612271501.343596395614661316577.252835832865045124375797 17.p73

86 81+ 3^5.19.29.163.2437.97039.7097659633.
70652746386577.1916612053219425097.
653871614937530243028591236621609112753 7.p60 [SNFS]

86 84+ 337.953.4201.7129.7673.33733849.88699609.
116954881.90086080346641.2668049475484462272617.
103951226908139453915946807265619933133 7.p48 [Boender, MPQS]

86 87+ 3^2.29^2.349.2437.872155043867498438975022559.
143123981309368535410436467969134856097075435196271.p82

86 97+ 3.29.389.93605971.611191106476618590825186295 51.p147

87 61- 2.43.367.167128464278505648546017711.p88

87 87- 2.13.19.31.43.59.349.1741.3539.9049.12864551149.
39473911093.438161173688359386382879154316058249.
756977142601483702376290737568976504406 1.p52 [Sosnowski, MPQS]

87 99- 2.13.19.23.31.43.661.24091.175573.2469781.2881804267.
1092661124097821279.152455005113524325753311.
383096887384268418370774628241 19.p84

87 59+ 2^3.11.55697.35627497511.
150915918675944954594444737655523666977802763501.p51 [SNFS]

87 71+ 2^3.11.569.2557.7669.39761.311637435100556782682869 21.c96

87 81+ 2^3.7.11.109.1009.1069.6211.9397.69193.1305956049553.
572784804111708617239.275494911380046279451859698693 9.p71 [SNFS]

87 82+ 2.5.757.17713.1970550037.2602812068044642075057.p121

87 86+ 2.5.173.757.3725194453021.438933802943464922549.
177499665274512637667986510125 7.c98 [ECM]

87 93+ 2^3.7.11.311.373.1069.1861.1824207401.
222766778473.1603436497111148347.
652347027231527386577284999025976 13. [Boender, MPQS]
384879120689000777378661802008612656918 41.p53

88 71- 3.29.27407.684051770708985153705990497.p105

88 73- 3.29.877.3797.2486878591.8346962654539916789651.p103

88 77- 3.29.859.3851.121979243.173930219.
1461004931.2479582211107.32794195186634267.
396359660827988734823783039013987713585203.p46 [Boender, MPQS]

88 81- 3^5.7.29.163.271.373.3079.5023.920107.19277893.
154801589419.269423089057.1382727100403197.
754881771935837635430208246666340717798 9.p48 [MPQS]

88 87- 3^2.7.29^2.59.349.373.4307603.341164933.1138769085609368107.
441519014589525663007054297.3215161162163515804118002128629821.p65

88 91- 3.29.3511.3851.12923.76493.121979243.409675631.29345245931.
120110720974063.812274766331627.70473516581738417603.
282344202450176772862222381414904879.p48 [Boender, MPQS]

88 59+ 89.827.3187.40032799.
337044848525168730157917372564141251999430961.p55 [SNFS]

88 62+ 5.1549.298688023895061910597.
182519013439569683733853424718354576805778417.p52 [SNFS]

88 64+ 4567553.195939868788292668161.
875952986950712020771791758239477081 7.p61 [MullFac, MPQS]

88 68+ 409.59969537.43189084479313.151043680546731471319025143411 3. [ECM]
67779111027438928091677210211540758 97.p42 [MPQS]

88 83+ 89.13478902529.1298613046063.10893357373063702877.
40222077954649298834999.p96

88 95+ 61.71.89.191.13691.5991631267.609623407461811.91528735274189891.
165285853891809571302177 31.14959515055676883452745842 81.p79

89 59- 2^3.11.244261.824426441656653258975619352938603687189967923 3.p62
[SNFS]

89 61- 2^3.11.977.9029.
192072718608170044515069891889306529417522604651739 63.p58 [SNFS]

89 73- 2^3.11.6133.746353.9919102516078567471644 7.p108

89 61+ 2.3^2.5.611953.44058801109.
438391137714793876102948653250260999 83.p63 [SNFS]

89 62+ 2.17.233.185169949922071929174031205624 69. [ECM]
128383174782570015833368753028219154 41.p49 [Boender, MPQS]

89 68+ 2.137.281.34273.45289.111641.47641655271963470761.
66888272090069544963926 89.p69

89 79+ 2.3^2.5.33181.1123045757479.
280328706498403193216 59.26502375089066237997601 43.
268093755790231767958690250860991843163321 1.p47 [Boender, MPQS]

89 93+ 2.3^3.5.7.373.171453265129.31058347971588901.
240418266049013838171813090l.124703957457945261625751038597 81.
34317506517837145724602803683537218321.p52 [Sosnowski, MPQS]

89 99+ 2.3^4.5.7.19.23.373.1783.2179.56086691.8718957649.
23903412677.1199756430973.819518823121194338503399237.
396031336258833036096416098 39.p82

90 89- 89^2.105199.13899103513995520959678437.c140

90 93- 89.3163.8191.223142932290089893.164460484444049643063833 11.
135527864130180006759565445551620385993953969173057863 57.p75

90 74+ 149.3701.4441.8101.414490467541349778982829849.p105

90 78+ 61.8101.1075441.1258228102616242933969.63388026716005362267267229.
151383193969980309792394971809057362556946557 29.p48 [SNFS]

90 85+ 7.11.13.103.571.10133.10331.32063.10568527.
51818803933489.58218277989371.1413079636086800310100 1.
52445330050188156684911031984731485 1.p54 [Sosnowski, MPQS]

90 87+ 7.13.59.8011.8527.3256411.149199143.6221851459.
7411854554893.110829950616937299682538070689 71.
73698255839565447949528704585296371.p56 [Boender, MPQS]

90 92+ 65610001.49770194385949448988131220529.c144

90 93+ 7.13.373.8011.152459.146014832281.1760137513571.81148527677263.
51097289288346502112732800968612149371. [ECM]
15623442535074119484774720481823926577089 9.p52

91 59- 2.3^2.5.2388932893.8058129503087.
73017803873940135045502529303005 43.p58 [ECM]

91 61- 2.3^2.5.4759.24389006459.200110293707150253416732601 7.p77

91 84+ 2.113.337.5297.6473.19681.238937310481.4133435955601.
9385865053272793.23720806299354809.491023239719310923984975145 7.p64

91 87+ 2^2.23.59.233.349.8191.72733.18037189.2670145421.22441957981.
6526924676202443999.821736267591519447224693014759.
25603671681627678632251518103093297.p43 [SNFS (p30.p35.p43)]

91 93+ 2^2.23.1861.8191.45013.74051251.121223269.2229587209.
902167833643.2903912538581700628844182315353818587 3.
17306339456109926493287187725484559386 7.p56 [Boender, MPQS]

91 96+ 2.193.10706369.307842632897.1515858847105409.
48940096749887394570287238593.
12458968480318006968706212261 13.p93 [ECM]

92 81- 7.13.19.43.199.515539.42197167.31913462107.
10247928172843303840789.3069256986870691269401689249.p79

92 85- 7.11.13.41.160591.19907681.523699469143.2554164508667.
10457508510821.3181616076935407089969136 21.
1428527884435797475243293951357 1.p56 [MPQS]

92 97- 7.13.8506513.330080010082861844768038 63.c157

92 99- 7.13.19.43.67.199.397.9241.200443.11161648279.
31913462107.23202831592909.70930159351591.
145939512769822531.40130889647393117634 7.
7752597070605982964298720743072950320877.p49 [MPQS]

92 61+ 3.31.20722433.724989069880567141579.
2354874064051645302471036215510478839.p54 [Sosnowski, MPQS]

92 70+ 5^2.421.1693.10529.123707809.282239880497.
2437806388601.5864995436400446277084526199 41.p65 [SNFS]

92 78+ 5.53.157.1693.6481073.71630833.224220049.2841487637.
3933814704550566317.844272712071800824382357853082067419 3.p58 [SNFS]

92 86+ 5.1693.36637.163573.756453466052160637170913918 93.
1551600233242931340270874541524 69.c95 [ECM]

92 92+ 449.159553.193155111326519579147624 81.c148

92 93+ 3^2.31^2.2791.50221.1302450803.17740445641.32418185637181.
1692355684767087043778553641050655 77. [ECM]
3998815081338410940164946469014685298635582 1.p59

93 65- 2^2.11.23.157.1091.3251.3823.6301.14040599.15444859.
5538800762691728749411402176496370913475013 71.p50 [SNFS]

93 67+ 2.47.1609.35084417.1094381753.113505947232535361186033551 1.p84

93 80+ 2.13441.157889.159617.241921.2567985659050337.
2365963726889474565532368 1.c97

93 84+ 2.17.97.449.2200153.3352519774969.57688845586033.86256359722121.
1349528139406162801.159334231154754546109519975210369.p63 [SNFS]

93 96+ 2.35521.285697.32831041.117365249.372449537.
76621956528193.59084622089845041107496019 3.
1121546785183552554153843285923879918145249337 7.p68

93 97+ 2.47.16879.513131.54616654996793.63940282440426599.
2269294326849342572930046 7.c124

94 59- 3.31.33969251.9782611231.530384916371631975360824030097 97.p66 [ECM]

94 79- 3.31.56249.793095310408644154785221.c126

94 59+ 5.19.356267447361645812297200742156692147458 47.p74 [SNFS]

94 64+ 2689.10753.68326583620381851841872382244381378527985048430678017.p66
[SNFS]

94 87+ 5.7.19.1249.1567.2437.208314599.40929388033.
433967276265442640003617371292322109 61. [Boender, MPQS]
83997128968135129477391572799117744064659964041.p56

95 59- 2.47.188801.2647996912138688405753.
13072233740924279273925629113381.p57 [ECM]

95 61- 2.47.1209471493819.
26268586581772224758870191129535108230315654937.p61 [SNFS]

95 87- 2.7.47.59.1303.4931.10847.7831741.1681997286703.
47580185521051.160078834772899612042558388244317.
91717544542285718127262819229661362258203.p51 [Sosnowski, MPQS]

95 93- 2.7.47.373.1117.1303.1256989.3109549.14408677.225860917.
897195863.179689568479529.5333343085769864263137007.
20998528381651761101979578227.p69

95 62+ 2.4513.184296453763149753123068189.
83863909160586280098779157222627160866979757.p49 [Sosnowski, MPQS]

95 71+ 2^5.3.284295626179975541.64227585121659404371046707.
43362802443508755986456540915 17.p65 [ECM]

95 76+ 2.73.113.4937.4128985757417.77746634651688031667971586 09.p102

95 86+ 2.4513.245774685932995231429421.c143

96 59- 5.19.153381393291373084193967489431184299758081.p74 [SNFS]

96 61- 5.19.54176176066083787.
76180121965063054107912421938335226844724866829111.p53 [SNFS]

96 69- 5.19.47.67.139.2386005820595543.367067046922355730526600873.
36195023899199695772372620765 4827.p55 [MPQS]

96 89- 5.19.176703805991096199597816960 29.c147

96 62+ 13.373.709.1489.134403538249.
73538889279932452483343401522656103 81.p66 [SNFS]

96 68+ 41.137.15121.224401.212145449.886809021929.
94199696508203397287343 29.p77

96 81+ 7.97.487.1303.2161.503123239.782756904961.
22193583312013939655707502855592 1.
767700436106492177185139254202281292818325 83.p52 [SNFS]

97 59- 2^5.3.103745502061.
53489014811148111678694572505473146058642537147509.p55 [SNFS]

97 61- 2^5.3.3411853.2519182007579.924828616443901341055328116808125 9.p67 [ECM]

97 71- 2^5.3.846179.1848983.3155535458407.
20535244308823.3152889469990230034438133899.p74

97 68+ 2.137.233.3673.28289.189977.404700913.
47861544593.65946910572570762943467788 89.p70

97 83+ 2.7^2.499.997.217389439543.8886614134516359119763 7.
266247076282068558808430716 33.564394297837277543289945095099.p65 [ECM]

97 87+ 2.7^2.59.67.139.1277.17397465227.183543436750757195037878 23.
398793620371159787000652204361122789 7. [SNFS (p26.p37.p50)]
321829115757420767154432743759000282063 81.p50

97 93+ 2.7^2.67.139.14704913.1188090720197837.
48693136738981649108065 33.26820323083463289348454232 17.
22718812296684602034163963294922763733.p68

97 94+ 2.5.941.533374656649061.107596791523984029973.
75836857210859126131201589.c123

97 95+ 2.7^2.3931.4561.22291.778051.593222898884496505984481.
71342855750719662240441372 1.728453229282964085523977231.
13138482964362818814469149781.735239464611390368629403564683.p34

97 97+ 2.7^2.1553.1631871607681574053.157424553737314765592522113.c144

98 59- 97.126143.14903949773387357773306988140114572882689.p71 [SNFS]

98 61- 97.19960177.28689253239418106309579479667009326 3.p77 [SNFS]

98 67- 97.5897.105727.459593737.40550040964194211028366927.
11407038926842133664889251648434252 23.p53 [MPQS]

98 64+ 257.26113.84737.21753046903297.
12943349514489737045699577412228125279308 9.p62 [SNFS]

98 83+ 3^2.11.3284521826459.39828911430149402605066 43.c127

98 85+ 3^2.11.1481.15131.61651.96731.969851.2822368051.7687265633.
61030438771.3302345866537.258847800613568559726331.
12567880628356583361572166052961.p47 [ECM]

98 97+ 3^2.11.971.18043.703643850734966893019.2843893735151058890777.c142

99 61- 2.7^2.8663.27817.105653.238877.49036900943.
10527303441917105235878602048817.p60 [Boender, MPQS]

99 73- 2.7^2.36793.32781728809147123385211912955 31.p109 [ECM]

99 61+ 2^2.5^2.53681.3151505411156191618453998 1.
19127659520761083793672080078432795166835573 3.p46 [Sosnowski, MPQS]

99 62+ 2.13^2.29.1117.7069.
1317003917633241579350563350934673393290189955701 7.p64 [SNFS]

99 68+ 2.2617.18353.4535080073.322776284081.15032031798473.
25350797590926834965037043376453349993661897 69.p48 [Boender, MPQS]

99 76+ 2.2617.18353.26033801.677502728081.8836328970557326091297.
13702449083684826241681.67466141416688336144166290166833 29.p47 [MPQS]

99 85+ 2^2.5^3.137.34511.19019801.332067621806931431.
20842757140684933502826 1.615287002470019622809170998441.p83

99 87+ 2^2.5^2.31.59.313.929.180174217.
60281824723934126056156112991395338513. [SNFS]
75658943812256376581698373926695934422489 67.p74

99 89+ 2^2.5^2.179.2671.16264346875446607587832 09.
10060442618561651620301021 3.p120

99 90+ 2.13^2.29.61.821.6121.30637.1118041.96049801.2198833093.
13157816761.184231655921.12443063374584118503841.
43001365724819276131009095892 21.p66 [SNFS]

99 94+ 2.13^2.29.2633.82721.567949.
15127752030589499 09.12945163857685968391517 69.p128