Y2K — OCTOBER 1998 UPDATE

In July, we published an extensive report *(Y2K: Overview and Summer 1998 Report [WM–840-842]).* Since then more information has arrived. I provide this information since you need to know it. What happens at the turn of the millennium will affect you.

Newsweek calls it "the day the world shuts down" and "the event that could all but paralyze the planet." The *Wall Street Journal* calls it "the most expensive accident of all time." *Computer World* says "the problem is far worse than even the pessimists believe!"

"Have you ever been in a car accident? Time seems to slow down as you realize you're going to crash into the car ahead of you.

"It's too late to avoid it—you're going to crash. All you can do now is watch it happen.

"The information systems community is heading toward an event more devastating than a car crash. We are heading toward the year 2000. We are heading toward a failure of our standard date format: MM/DD/YY.

"Unfortunately, unlike the car crash, time will not slow down for us. If anything, we're accelerating toward disaster . .

"Our information systems are based on a faulty standard that will cost the worldwide computer community billions of dollars in programming effort . . We and our computers were supposed to make life easier; this was our promise. What we have delivered is a catastrophe."—*Peter de Jager, "Doomsday 2000," Computer World, September 6, 1993.*

—That was written five years ago! Yet today relatively few businesses and governments in the world are doing much about the problem. And those which are (primarily in the U.S., Canada, and Europe) have started correcting the problem too late to complete it in time.

"The mainstream is now beginning to report a phenomenon that has been known to computer professionals for years: There is a computer software and hardware problem of Goliath proportions looming on the horizon. The problem is a result of the simple fact that for years computer programmers have programmed computers to read and in-terpret dates using a 2-digit year. On the cold night of December 31, 1999, as the clock rolls over to 12:00 midnight, millions of computers and other devices will begin spewing out bad data, malfunctioning, or simply shut down."—*Jason Peck, "A Programmer's Perspective," April 27, 1998, online data.*

BUSINESSES—Businesses everywhere have been remarkably slow in getting started at dealing with this problem. Yet businesses in America are far ahead of those in most other countries.

For example, in late July 1998, United Airlines issued a progress report on its efforts to fix its Y2K problem. Viewing it causes one to draw in his breath. The extent of the problem to be repaired is fabulous. United Airlines found 40,000 computer programs that need checking—and 11,000 of these need fixing. This software affects a wide range of functions from payroll and accounting to the frequent flyer program to scheduling, reservations, and inventory. United is also scouring flight equipment—including communications, baggage systems, and avionics—to see what needs repair.

United says that, to-date, it has completed about 70 percent of its Y2K work on its critical core computer systems. That means the airline, like many others, is using triage. It is concentrating on its most vital issues and waiting until later to handle the remainder.

Arthur Levitt Jr., chairman of the Securities and Exchange Commission, has sent letters to more than 9,000 publicly traded companies, demanding accurate reports about their Y2K repair projects.

BankAmerica is spending $600 million and Citicorp $380 million on their Y2K programs. Merrill Lynch estimates that the economic impact of fixing this problem will be $600 billion to $1 trillion.

Chase Manhattan Bank runs an estimated 200 million lines of program codes. They have already allocated $200 million (a dollar per line of code) to correct their Y2K problems. How many organizations can afford to spend money like that? Citicorp, alone, has 400 million lines of code.

Often businesses use custom-made applications written in relatively ancient computer languages,

such as COBAL. Programmers must be recruited or pulled out of retirement, to check and correct date calculations buried in thousands of lines of computer code.

The Federal Drug Administration estimates that 2,700 medical device makers (out of 16,000 companies) have products that could be affected by the Y2K glitch. Yet, despite the life-and-death implications, only about 500 of those firms have reported that they are trying to solve the problem.

What if only 5 percent of the businesses fold because of Y2K? Or 5 percent of the medical equipment starts killing people? What if only 5% of the banks fail? Even a little failure would powerfully affect the nation.

GOVERNMENTS—The U.S. Government is far behind industry in tackling the Y2K problem. It is generally conceded that government on all levels will not be fully prepared when the millennium changes. A number of federal agencies will be especially unprepared (see *Report Card*, below).

Here is a recent report from one government agency which is trying hard, yet recognizes that it has a lot more to go: The U.S. Postal Service hints that there may be trouble ahead:

"The Year 2000 challenge extends across the entire information technology industry and includes any system, equipment or product that uses date data . . The Postal Service has thousands of components ranging from information systems to mail processing equipment, from forms to elevators and security systems, that may not function properly when the century date changes. Anything that manipulates or takes action based on a date has the potential for failure or, possibly worse, inaccurate operation.

"For the Postal Service, the Year 2000 problem affects application programs, data, operating systems, computer hardware and a wide variety of equipment (*e.g.,* mail processing equipment, heating and air-conditioning controllers, and telephones) . . For more information, go online to www.usps.gov/year2000>"—*Memo to Mailers, USPS, August 1998.*

Notice that USPS does not say it is going to solve its problem in time.

The Internal Revenue Service has been trying to replace its non-Y2K system for 11 years. So far, it has spent $4 billion—but with no success. The system contains over 100 million lines of code.

We are told that the nation's banks will be okay when 2000 rolls around. But what about the bank that controls them? U.S. senators have the authority to get things done; yet when Sen D'Amato (R-NY), acting in official capacity, asked the head of the Federal Reserve whether it would be ready for the turn of the century,—he was told "no comment." The organization responsible for stability in our nation thinks it is none of anyone's business whether the Fed will exist in a year and a half! This is the banks' bank. You cannot get your money if they cannot get theirs.

PUBLIC UTILITIES—How are the public utilities doing? Many of them may not be prepared when that special date rolls around. Here is a memo from one utility company:

"There is a good chance many areas of our life may be affected when the computer interprets 01/01/00—numbers that should represent January 1, 2000—as January 1, 1900 . . It has been estimated that all existing programmers today would not totally solve the problem by January 1, 2000, even if

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REPORT CARD—Good news from Washington! The U.S. Government is getting ready for January 1, 2000! When will it be ready? —*Within six months to 20 years after January 1, 2000!*

Based on current rates of progress, 14 federal agencies report that those of their computers which perform "mission critical" functions will be fully millennium-compatible by the following year:

National Air and Space Administration - **early 2000**.

Federal Emergency Management Agency - **mid-2000**.

Agency for International Development - **mid-2000**.

Department of Education - **mid-2000**.

Department of Justice - **2001**.

Department of Health and Human Services - **2001**.

General Services Administration - **2002**.

Department of the Treasury - **2004**.

Department of Agriculture - **2005**.

Office of Personal Management - **2010**.

Department of Transportation - **2010**.

Department of Defense - **2012**.

Department of Labor - **2019**.

Department of Energy - **2019**.

Hard to believe? The Emergency Management Agency not prepared for its own emergency? The Agency for International Development without its own internal development completed in time? The Office of Personal Management not able to manage its own personal affairs?

For more on this, we refer you to official documents of the House Subcommittee on Government Management, Information and Technology, of the Government Reform and Oversight Committee.

they spent all of their working time on correcting the date. Almost every piece of software included that flaw . . One of the potential problems is the 'embedded chip,' which is used by a great number of appliances and automatic gadgets. There are billions in use, and unless they are checked, we may not know until January 1, 2000, which ones are date-sensitive."—*Tom Purkey, General Manager, Tennessee Electric Cooperative Association, The Tennessee Magazine, September 1998.*

Not very reassuring. Rick Cowles, a leading expert in the electrical utilities industry, estimates the chance of a power grid failure due to Y2K at 100 percent.

"In January [1998], the Public Utility Commission of Texas surveyed the state's 176 [electrical] generation and distribution companies on their Y2K readiness. Only 44 percent responded. None were yet compliant, and none had any clear idea when they *would* be. Among Texas electric co-ops, only 18 percent had written plans for Y2K preparations, and 24 percent said they hadn't yet begun planning. So the PUC . . told them to "monitor Y2K issues" and then [PUC] put up a web page about the problem."—*PC Magazine, October 6, 1998.*

Are you ready for more?

"About 20 percent of U.S. electric power comes from nuclear plants. But the Nuclear Regulatory Commission is required by law to shut down plants that cannot show they can operate safely. In June [1998], the NRC wrote the operators of America's 108 nuclear plants, demanding a statement of compliance, or concrete plans by the end of 1999. The number of compliant plants so far: 0."—*Ibid.*

And then there is this:

"40% of U.S. power comes from coal-fired plants. But coal plants require an immense, steady supply of coal, which arrives daily via huge strings of rail cars. Railroad-car movements in this country are controlled by aging computers and hidden embedded systems.

"In addition, about 30 percent of our electricity comes from gas-fired generators. Natural gas is controlled by systems built around PLCs [microprocessor chips]. And the gas industry has not been a leader in Y2K preparations."—*Ibid.*

EMBEDDED MICROCHIPS—What about those little chips? They are in virtually all electronic devices in controllers and perform almost limitless tasks. They are in safety and security systems in conventional power plants, water treatment plants, elevators, nuclear power plants, VCRs, fire engines, ballistic missiles, etc. They verify maintenance at regular intervals, issue safety warnings, and stop and start operating functions. They control telephone switches, alarms, sprinkler systems. They trigger solenoids to open and close gates, valves, automatic door locks, railway switches, etc.

Many are not date sensitive; yet, because there are billions of them in operation, massive numbers are almost impossible to locate. How many would have to fail in our railways, jetliners, elevators, traffic systems, factories, electrical grids, ships, and nuclear power plants—before we would be in a state of chaos?

OVERSEAS—We earlier reported that governments and businesses in a majority of other nations are far behind in adapting their computers for the turn of the century. Because of this, catastrophic conditions will occur overseas at that time. However, because the entire world is now so closely linked together, foreign problems will quickly affect us.

"The millennium bug isn't just an American problem. The United Nations wants its members to forge global alliances to help stamp out the glitch.

" 'There truly is no time to waste,' said Richard Sklar, a U.S. official at the United Nations. He warns that countries that fail to act are risking serious disruptions from malfunctioning computers.

"The United States, Britain, Canada, and some other countries have devoted millions of dollars to preparing for 2000. Experts say other countries, including Germany, Japan, and Russia, are way behind and due for a shock if computer systems lose track of time . .

"Even if the United States fixes most of its bugs, the global economic system could still shake because of other countries' problems. Many world leaders are too busy with the Asian financial crisis

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NOT GETTING READY—Some say there is no problem, that everyone is just about ready for 2000 to arrive. I have read such reports; you probably have too. Read this:

"From a survey of 15,000 companies in 87 countries for a July 1998 report:

"23% of all companies have not started year 2000 efforts. More than 80% of these are small companies.

"19% of the companies that have started compliance efforts began face-to-face meetings in 1998 with vendors that provide mission-critical solutions. These meetings were required, because survey letters proved to be an inaccurate assessment method.

"50% of all companies do not intend to perform year 2000 testing, because they plan to fix and install code to production systems."—*PC Magazine, October 6, 1998.*

or the new single European currency to worry about the year 2000 problem . .

"Edward Yardeni, who himself called for a world war against the bug, now estimates a 70 percent chance that the bug will set off a global recession. The economist says the downturn will be at least as bad as the 1970s oil crisis.

" 'If we have everything fixed in the United States but there are major disruptions in Europe and total calamity in Asia and Latin America, we're going to be affected in a very, very adverse fashion,' says Mr. Yardeni, chief economist for the international banking firm, Deutsche Morgan Grenfell . .

"Capers Jones, chairman of Software Productivity Research, estimates the global cost of repairing software at $1.1 trillion."—*World, July 18, 1998.*

PERSONAL COMPUTERS—Contrary to what we wrote in our previous *Waymarks* report, we now learn that a majority of personal computers are non-Y2K compliant. As recently as last year, the BIOS (basic input output/system) in most PCs were still being programmed to roll over to January 1, 1980! If your system is based on an Intel Pentium-90 chip, it probably will not function correctly after the century changes! Because this is a BIOS problem, it matters not what brand of personal computer you have. It has been estimated that 75 percent of PCs are non-compliant.

And there are other problems. Current computer hardware can be at fault:

"Noncompliance in hardware devices and PC BIOSs can cause equipment to fail or misinterpret 21st century dates as 20th century ones. Some PC BIOSs will work after January 1, 2000, but cannot roll over on their own past December 31, 1999. Others require a BIOS fix in order to recognize any dates in the next century."—*PC Magazine, October 6, 1998.*

Or the problem can be in current software:

"Year 2000 compliance in off-the-shelf software, custom applications, and data files is much trickier to pinpoint. Problems can be as basic as a 2-digit year field mask or as complex as a lengthy calculation on a date value buried in a code snippet. Worse, a date problem can arise in a seemingly compliant application due to [a 2-digit] data entry."—*Ibid.*

TAX TIME—At the present time, all money electronically transferred to the IRS goes there via a standard 2-digit year field. Yet the IRS has announced that only a 4-digit will be allowable in 1999. What will happen in the spring of 1999 when everyone tries to do that, using non-compliant equipment?

EVERYTHING'S ALL RIGHT—America believes it is prepared:

"From a CIO magazine survey of 643 individuals for a *Year 2000 Consumer Awareness Study* in May 1998:

"38% admit they're not aware of the year 2000 problem.

"62% know about the problem. Of that number, 50% are not at all concerned about Y2K afecting them personally, and 80% are confident the problem will be fixed before the dawn of the millennium.

"Yet CIO's April 1998 poll of technology and business executives indicated that only 17% were confident the glitch would be fixed in time."—*PC Magazine, October 6, 1998.*

CHECKING YOUR OWN EQUIPMENT—PC problems occur in four areas: the two-digit code in commercial PC software, the BIOS chips that control PC hardware functions, the habit of entering two-digit dates in spreadsheets and databases (when four-digit entries could be used), and the embedded code in the hardware and software.

For a quick check on what your computer will do on January 1, 2000, simply change the date on your PC to December 31, 1999, and the time to 11:55 p.m. Ten minutes later, the computer should have a correct date of January 1, 2000, and the time to 12:05 p.m. If it does, your computer is Y2K compatible. But that does not mean that all your software is. Test software in the same manner. Contact companies and obtain certified *Y2K-compatible* equipment and software. For legal reasons, they are not likely to declare it "Y2K-compatible" unless it really is.

If you would like extensive guidance for checking out your own computer equipment and software, consult the October 6, 1998, issue of *PC Magazine*. Do not expect a lot of help from software firms and vendors. They have been told by their lawyers not to say much. They generally refuse to provide compliance data or say the software (even though made in 1997) is too old to fix and therefore not compliant. So, if they say something is "Y2K-compliant," it probably is.

Surely, we are nearing the end. Crises seem to be mounting on all sides. But the faithful will remain in the hollow of God's hand.