

IBM, has recommended replacing the machines.

There is a lesson to be learned here. Consultants confronted with this problem have told me this all along. The problem is deeper than the programs. It deals with the micro-code beneath the programs. This micro-code is in everything from our telecommunications systems to the personal computer on your desk—essentially the infrastructure of the company or agency.

Thus, we peel back another layer of the onion. The FAA is taking multiple approaches to its fix: a combination of debugging and replacement. On the one hand, debugging old systems risks that they won't be fully tested until after the year 2000. On the other hand, replacing them costs millions upon millions. When the maker of the machines—in this case IBM—recommends replacement, and a failed effort to debug the machines could mean lives lost in air accidents across the country, I would prefer we lean heavily on the replacement approach.

With fewer than two years until January 1, 2000, this lesson must be learned quickly and throughout the Federal Government. A few Chief Information Officers who are ahead of the curve on this issue are similarly discovering they not only have to fix the application codes, but they also have to make their infrastructure—telecommunication systems, micro-computers, and electrical components—year 2000 compliant.

In the few months ahead, agencies must be ready and willing to admit the extent of their problems, and find solutions that will be balanced between debugging and replacement. At the same time, we in Congress must be ready and willing to assist agencies in what is beginning to look a lot like a matter of damage control.

I ask that today's Times article, "F.A.A. to Fix and Replace Aging Computers," be printed in the RECORD.

The article follows:

[From the New York Times, Jan. 29, 1998]

F.A.A. TO FIX AND REPLACE AGING COMPUTERS

(By Matthew L. Wald)

WASHINGTON, Jan. 28—The Federal Aviation Administration said today that it would hunt down and remove the "year 2000" bugs from 40 crucial, aging air traffic control computers, and then throw out the computers themselves.

One team at the F.A.A. has promised to have the bugs fixed within 90 days. The leader of a second team announced today that the agency would replace the computers anyway, at a cost of about \$100 million, because of uncertainty over whether the software changes can ever be tested adequately. But since there is also uncertainty over whether all the computers can be replaced within the next 23 months, the de-bugging will continue.

Around the world, the issue, known in data processing as "Y2K," is perplexing companies because computers that record the date as a 2-digit number will conclude that the year after 1999 is 1900.

The problem was first thought to be a programming glitch. But as the F.A.A. is demonstrating, the line between hardware and software is not so clear, because of computer instructions, called micro-code, that are

built in and are more basic than the programs the computer runs.

In some instances, the answer may be the wholesale replacement of computers that might otherwise have run for years. Early indications are that many airlines will also throw out numerous computers.

George L. Donohue, associate administrator of the F.A.A. for research and acquisitions, said, "Some of the software people now say that even if you think you've fixed all the micro-code, there's no way to be sure."

But, speaking today at an air traffic control conference, Dr. Donohue said that trying simultaneously to de-bug the system and replace it was a good "belt and suspenders approach," because it was impossible to be sure the F.A.A. could replace the aging computers in the next 23 months.

Drucella Andersen, a spokeswoman for the agency, said, "We're trying to do both because it gives us the highest assurance and insurance."

Just last week the F.A.A. invited reporters to tour a "war room" where a team of software engineers is coordinating the de-bugging of 297 interrelated computer systems that make up the National Airspace System.

The machines are at the heart of the 20 air traffic control centers that handle high-altitude, long-distance flights, and officials said they were confident that their replacement would not be necessary. The software changes are projected to cost \$91 million, and involve 22 million lines of software.

The International Business Machines Corporation, which made the computers, warned the F.A.A. last fall that it no longer had the engineers or software tools to find the bugs, and recommended replacing the machines.

Dr. Donohue said the computers were about 14 years old, which he termed old by the standards of private industry but young for the F.A.A.

The agency's budget does not include the estimated \$100 million to replace the computers, but officials said they could delay other modernization projects.●

CONDEMNING IRAQ'S THREAT TO INTERNATIONAL PEACE AND SECURITY

Mr. BOND. Mr. President, the crisis in Iraq has been created because of the appalling behavior of a man bent on defying the legitimate directives he agreed to as the defeated leader of a ruthless and rogue army. For months, if not years, Saddam Hussein has been developing and hiding the very weapons he explicitly vowed to excise from his country's arsenal. These are weapons which he has demonstrated the will to use and which, in a slightly more sophisticated delivery system, may threaten the entire world. He has starved his people in order to gain sympathy from a compassionate world community, he has gassed his own citizens to silence their cries for freedom, he has ruthlessly attacked his neighbors, massacring thousands through chemical warfare, and he has threatened to incinerate an entire people of a neighboring sovereign nation.

This crisis needs to be ingrained into our psyche as a case study of how a bellicose and unrepentant government can circumvent its obligations to the world community and world peace, and avoid the reasonable consequences for those actions. Even more so, this is an object lesson of how our "allies" will respond to such behavior. They seem willing to

curry favor with a dictator by compromising and redefining critical enforcement procedures. Compromise? What is there to compromise? Saddam has broken his covenant with the world. We know it. The world knows it, and our collective governments have been ineffectual in dealing with him. To the President and the leaders of the other nations of the world, I ask three very basic questions and give you three very basic "heartland of America" responses.

First, has Saddam honored his commitment to the world in freely and openly ridding Iraq of weapons of mass destruction? No.

Second, will he? Not if we don't have the courage to force him, with extreme prejudice to his military, if necessary.

And third, is he more dangerous today than yesterday because of a basic weakness and willingness to compromise something which should be enforced without compromise? And that answer is, yes he is more dangerous.

We have wasted critical time. We have allowed Saddam the opportunity to develop the very things he has sworn not to and the very things we swore we wouldn't permit. The current situation must not continue. We must and I believe we can, convince a nervous and wary cadre of allied nations to stand up for what is right and what is demanded to preserve the stability of the world. But if not Mr. President we may have to go it alone or with but a few courageous colleagues from the league of nations.

I am sure we will support the President's decision for decisive action, whatever it may be. Therefore, I join with the majority and minority leaders of this great body and ask that they would consider adding me to the list of co-sponsors of their concurrent resolution number 71 concerning the current crisis in Iraq.●

VIOLENT AND REPEAT JUVENILE OFFENDER ACT OF 1997

● Mr. LEAHY. Mr. President, I want to speak briefly about juvenile crime legislation pending before the Senate. The "Violent and Repeat Juvenile Offender Act," S.10, was reported by the Judiciary Committee last year and may be among the bills we consider early in this session. While the measure was improved during the course of the Judiciary Committee markup, unfortunately, as explained more fully in the minority views to the Committee report, there is much work that still needs to be done and much that still needs to be improved.

The bill reported by the Committee to the Senate would mandate massive changes in the juvenile justice systems in each of our States, and would allow an influx of juvenile cases in Federal courts around the country. The repercussions of this legislation would be severe for any State seeking federal juvenile justice assistance.