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**RECYCLING BUSINESS
ASSISTANCE CENTER**

A cooperative effort
of the N.C. Department of
Environment and Natural
Resources and the N.C.
Department of Commerce.

Recycling Works

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Dealing with Electronic Waste *How Does It Compute?*

By Scott Mouw, Community & Business Assistance Section Chief

The exploding volume and variety of consumer electronics produced over the past few decades has given us capabilities beyond our wildest dreams. Now we are awakening to the second half of the technological revolution – all the gadgets and machines that make us efficient at work and entertained at home eventually fail, or are replaced with the latest “new and improved” model, and become “waste.”

As waste, electronics pose a huge challenge. The seemingly benign computer screen on which you may be viewing this article is shrouded with three to five pounds of lead. As you watch television tonight, you’ll be staring at a machine with twice as much

lead as your monitor. The lead protects us from the X-rays that produce the images we use and enjoy and it is what makes the devices so heavy. Lead also exists in the circuit boards, and electronics in general contain a wide range of mixed materials – everything from glass to a spectrum of plastics and a minefield of metals, including gold, silver, mercury, palladium, etc.

In almost every sense of the phrase, it is not in the “public interest” to throw these materials in a landfill and forget about them. The lead and hazardous materials are a long-term threat to groundwater.

(See Dealing, Page 8)



Boxes full of defunct computer monitors await processing at a recycling center in Durham.

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DPPEA Holding Solid Waste Reduction Assistance Grant Round

After a long hiatus, the N.C. Division of Pollution Prevention and Environmental Assistance (DPPEA) has gotten the go-ahead to hold a grant cycle to fund local government and nonprofit waste reduction projects. The Solid Waste Reduction Assistance Grants, or SWRAGs, have over the years funded many critical program improvements for North Carolina city and county recycling programs. The SWRAGs have also spurred the development of model programs that offer "best management practice" examples for all jurisdictions.

DPPEA is drafting a Request-for-Proposal (RFP) to be released before the end of the year – probably sometime in late November or early December. As in years past, the SWRAGs will include a number of funding categories that seek to encourage specific practices and projects. In addition there will be a general category for proposals that do not fit the specific targeted project areas. The 2003 SWRAGs will include the following categories and the total funding available in each:

- C&D Salvage/Reuse (\$32,000),

- Swap Shops (\$10,500),
- Paper Waste Reduction and Recycling (\$80,000),
- Backyard Composting (\$12,000),
- General Waste Reduction/Recycling (\$150,000),
- MRF Development (\$100,000),
- Mercury Recovery/Diversion (\$7,000), and
- Buy Recycled (\$8,000).

The SWRAGs is normally a very competitive grant cycle, and it is usually not possible to fund all proposals submitted. This particular SWRAG is also very complex with the eight possible categories of funding. It is to applicants' advantage to review and follow the RFP's printed guidelines and to submit well-planned and well-developed ideas. DPPEA staff are available to explain the grant process and to assist local government and nonprofit agencies in developing ideas for grant proposals.

Please feel free to contact Jim Hickman at (919) 715-6528 with any questions.

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& **TRADE SHOW**



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Correction Enterprises Offers Prison Industry Enhancement Program to Private Sector

Could this mutually beneficial partnership with North Carolina's Department of Correction be part of your company's expansion plans?

The Prison Industry Enhancement (PIE) Program was created by Congress to encourage state and local governments to establish employment opportunities for prisoners that approximate private sector work opportunities. The program is designed to place inmates in realistic working environments, pay them prevailing wages, and enable them to acquire marketable skills to increase the potential for their successful rehabilitation and meaningful employment upon release.

A private sector PIE partner would maintain complete control over the business operation within industrial space at correctional facilities located throughout North Carolina. Correction Enterprises is willing to lease the available industrial space at rates that a potential PIE partner will find very reasonable. Other tangible benefits to the PIE partner include a highly productive, motivated and stable workforce, and a workforce ready to perform entry level and labor-intensive jobs.

The private sector PIE partner must agree to pay the inmates a prevailing wage for their work as determined by the Employment Security Commission, cover work-

"Escod Industries has been participating in the PIE program in South Carolina for over 10 years. We have found the program to be extremely beneficial. The inmate workforce has consistently produced high quality products that meet or exceed the expectations of our world-class customers."

–Ulysses Taylor, Escod Industries

ers' compensation, and pay Social Security taxes. Other benefits would be at the discretion of the private sector PIE partner, who is also responsible for providing civilian supervisors and inmate training.

The private sector partner would not be allowed to close an existing operation in the community in order to open a new one within the Department of Correction system. Appropriate partner candidates include those who are developing a new product line or expanding their current operation.

If you are interested in becoming a PIE partner, or for more information about the program, please contact Judy Chapman, PIE Coordinator at (919) 716-3974 or (800) 241-0124 or by e-mail at jchapman@doc.state.nc.us.



SCHOLARSHIPS
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To apply for your scholarship, call:
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(919) 715-7272 (SBTDC)



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Notes From a Post 9/11 Banker - *Part Two*

By Fred Broadwell, Commercial Loan Officer



In the first installment of these comments, I offered advice on getting capital for your recycling business in the face of challenging economic times. In Part One, I suggested that you consider shopping around to pique the interest of your lender, cultivate a banker as well as

a bank, and look into the power of leasing and factors. Here are four more ideas to put in your financing toolbox ...

Reframe the project. Your bank's reluctance to make a loan may be related to the fact that they label you as a "recycler." Some banks are increasingly wary of recyclers because they are afraid of environmental contamination issues. They may be using insurance to protect their loan portfolio and that insurance may even prohibit them from lending to you. There are two things you can do:

- 1) To the extent possible (be honest), describe what you are doing as materials handling. Throwing the term "recycler" out too early may cause you problems. For example, it doesn't make sense to penalize you for recycling pallets, when the guy next door is handling boxes of wooden widgets and the banker loves it.
- 2) Second, be clean! Specifically, be prepared to prove that your recycling process is environmentally-friendly, especially with regards to soil contamination. If it's not, your banker is just being prudent to question the loan request.

Remember what bankers want. In these days of economic recovery, the number one thing that bankers are looking for is...management experience. Why? This is still the prime predictor of whether the loan will repay or not. To impress your banker, try these strategies:

- Point out your individual past successes and put those on a resume.
- If your management team is thin, figure out how to fill in the gaps. Most successful businesses need two to three key managers with skills in operations, sales and financial matters. These skills are not often embodied in the same person.
- Build a team. With a new project, try and go visit an operating facility that does the same thing.

“**Some banks are increasingly wary of recyclers because they are afraid of environmental contamination issues.**”

Document (with photos if possible) what you learn. Then when your banker asks if you have experience with the new operation, you will be prepared.

Provide independent information. Rarely do I receive a loan application with much in the way of independent verification of recycling trends and issues. Journals like *Resource Recycling*, *BioCycle* and *Waste News*, to name just a few, are full of analysis of where your commodity or industry segment is headed. Don't let that sit on your desk. Fax a copy to your faithful banker, to keep them informed and to give them some ammunition for the tough underwriters. If the analysis isn't favorable to your project, what does that tell you?

Try investors. Considering the performance of the stock market, there is a growing cadre of investors who are looking for ways to increase their returns. Is your project exciting and lucrative enough to interest an investor? Investors look for 10 – 30 percent annual return. If not, you might ask yourself: is it lucrative enough for me to invest my own time and money? If the project meets this test, how do you find investors? In short, word of mouth. It has been recommended that those who seriously want investors call five wealthy individuals per day, asking for money and referrals from each. Everyone knows some of these people, with doctors and dentists a good place to start. But be prepared to have a professional-looking business plan, and if all goes well, to make some money!

If you have financing questions, feel free to contact Fred at 1-800-476-7428 or fred@self-help.org. The nonprofit Self-Help Credit Union offers technical assistance as well as recycling loans, including the popular SBA 504.

North Carolina Considering Advanced Recycling Fee on CRTs

North Carolina, along with a number of other states, is considering legislation to set an “advanced recycling fee” or ARF on cathode ray tubes (CRTs). The fee will raise funds to establish a local government-operated collection infrastructure, with supporting activities from the state.



The bill contains other features designed to enhance local efforts and to accomplish other critical goals seen as necessary to make the legislation successful. A portion of the ARF would finance a revolving loan fund for developing electronics recycling markets. A separate small fund will also encourage creation of more environmentally friendly electronics. In addition, the state is responsible for public education efforts, certifying electronics processors, setting up a statewide market contract for local governments to use, and procurement of “green” electronics for state agency use.

Senate Bill 1255 (S1255), along with companion bill H1565, would set a \$10 fee on the purchase of CRT-containing products, chiefly televisions and monitors. Most of the proceeds would be distributed to city and county collection programs at the rate of \$10 per CRT recovered. The \$10 per unit reimbursement is intended to be sufficient to cover the cost of marketing the CRTs but also to cover the basic costs of setting up collection programs for CRTs and other electronics.

The basic form of the legislation was the product of numerous meetings between local governments, the League of Municipalities, N.C. Association of County Commissioners, N.C. Conservation Council, N.C. Conservation Network, and the N.C. Department of Environment and Natural Resources. The core points of these meetings were fashioned into the bill by General Assembly staff and then introduced by Sens. Kinnaird, Clodfelter, Albertson and Odom as S1255, and by Reps. Hackney, Weiss, Dedmon and Insko as H1565.

The General Assembly took no formal action on the legislation during the 2002 short session. In lieu of action, and to address some of the more controversial elements of the bill, the sponsors asked General Assembly staff to convene a stakeholder process to encourage dialogue and potentially find consensus on the bill. That process is expected to continue among the various interested parties. The 2003 long session should see reintroduction of the bill and consideration by committees in both the House and Senate.

To see copies of the bill, please go to <http://www.ncga.state.nc.us/html2001/bills/AllVersions/Senate/S1255v1.html>. If you have questions about the bill or its status, please call Scott Mouw at (919) 715-6512.

LOANS FOR RECYCLING COMPANIES

A Project of the N.C. Environmental Loan Fund

Commercial & SBA Loans from \$10,000 to \$2.5 million for Collection, Processing, Composting, Reuse, Organics, Recycling Equipment & End-Use Manufacturing.

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www.self-help.org

N.C. Environmental Loan Fund: Self-Help established the N.C. Environmental Loan Fund to provide financing to small businesses and other organizations that preserve our natural resources. Projects that are targeted for financing include recycling firms, land conservancies, environmental consulting and services, environmental equipment firms, and sustainable development products and services. Self-Help has extended more than \$6 million in financing to this growing and important segment of our economy.

Electronics Recycling: *Considerations in Infrastructure Development*

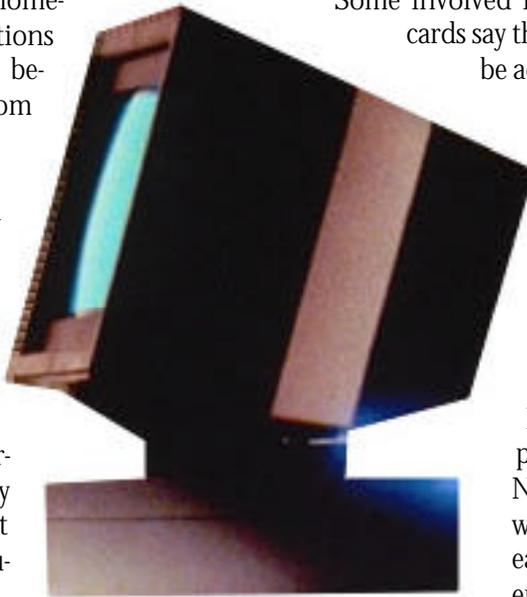
As with any discarded material, for electronics recycling to succeed, a market infrastructure must be developed. Working backwards, that means there will have to be end users of the whole electronic unit, or the unit's individual components. There will then have to be processors that efficiently deliver materials to end users and in turn offer competitive terms to collectors. Collectors themselves must do their homework and exercise realistic expectations about what processors can handle before they pick up the first item from generators.

Electronics management will fall into a familiar hierarchy as the whole market chain tries to wring as much value as possible from the material. Much of electronic equipment can be reused in its current condition, or can be reused following some repair and refurbishment. What can't be reused may be shipped intact until at some point the products are dismantled manually and/or automatically.

Constituent commodities and parts will then make their way toward end use. Some computer chips may be reused directly in other products. Leaded glass will be processed back into leaded glass or used in lead smelting. Precious metals will be refined, plastics possibly ground and reused, and copper sent to smelters. It is possible that some materials, especially the unpredictable mix of plastics, will end up as true waste or process fluff that is disposed of in landfills. The electronics stream is highly variable and will challenge processors and end users to be creative in achieving value and efficiency.

As electronics recovery has grown, some parties have become concerned about its export to less developed nations who, though in need of the products and raw materials, are less equipped to process materials safely. This concern over export dumping has lead China, a major potential market for electronic goods, to impose severe restrictions on electronic imports. Waste Management Industries' Asset Recovery Group, the electronics

arm of the international waste company, has begun to offer its customers "domestic markets only" recycling services. Although there are legitimate overseas needs for whole working electronics as well as component materials such as copper, the export picture has become muddied and may not clear anytime soon



Some involved in the debate over electronic discards say that manufacturers ultimately must be accountable for building a national recovery infrastructure for their end-of-life products. This idea, captured in the phrase "product stewardship," is being tested in a national dialogue between states, local governments, NGOs and the electronics industry in the National Electronics Product Stewardship Initiative (NEPSI). Although it appeared to have some early success, NEPSI bogged down this summer when industry pulled back from earlier support for a national, front-end financed system. However, the dialogue is continuing, and a smaller

group of stakeholders are now trying to hammer out the details of a national system that would be established in large part through industry actions.

As the electronics recycling story unfolds, the N.C. Division of Pollution Prevention and Environmental Assistance (DPPEA) is seeking to maintain a list of electronics recyclers serving North Carolina in its Directory of Markets for Recyclable Materials. The market situation is more dynamic and complicated for electronics than most other waste materials, and DPPEA advises electronics waste generators and collectors to practice a "buyer beware" approach in choosing markets. Fortunately, it is expected that market choices will grow for North Carolina generators, especially if the pending advanced recycling fee legislation passes (one of its features is the establishment of a revolving loan fund for electronics recycling market development). To see the latest list of electronics recyclers serving North Carolina, please log on to: <http://www.p2pays.org/DMRM>.

Local Governments are Finding Solutions to Management of Electronic Waste

By Jim Hickman, Waste Management Analyst

Despite tight budgets, North Carolina local governments continue to add e-waste recycling programs. More than two years ago, Lee County implemented one of the first permanent e-waste collection programs in the state. Today there are roughly 20 programs in North Carolina ranging from curbside collection programs to one-day collection events. Although the problem of managing e-waste is common to local governments in North Carolina, many unique and highly creative solutions have been developed.



One innovative approach to e-waste collection is the collaborative effort between Wake County and the City of Raleigh. Wake County operates a permanent drop-off site for county resi-

dents and businesses. Residents can drop off electronics at no

charge, and businesses are charged \$5 per monitor. What makes this program unique is its relationship to the City of Raleigh's program. Raleigh provides curbside electronics collection for city residents by appointment, using existing field supervisors to collect the electronics. This represents a great way to implement a curbside program without requiring major changes to existing programs, since supervisors are already on the road in Raleigh ensuring that collection crews are completing assigned tasks. Once picked up, electronics are stored at a city facility until a full load is collected. Full loads are then taken to Wake County's drop-off site and added to the county's electronics.

Many other creative solutions to the growing e-waste problem are being implemented across the state. Cabarrus County, for example, after holding a very successful "no-charge" multi-day collection event for resi-

dents, decided to attempt a pay-per-unit two-day collection event. Residents could drop off some electronics for free, but would have to pay for copiers and items containing cathode ray tubes, including televisions. Fees ranged from \$5 for monitors to \$0.23 per lb. for large televisions. The event proved to be very successful.

Taking a different approach, the City of Durham recently added electronics to an existing contract for the operation of its permanent household hazardous waste (HHW) program.

These programs are representative of the innovative solutions being employed to stem the tide of the growing e-waste management problem. To find out more about local government e-waste programs please visit <http://www.p2pays.org/electronics/govelec.htm>.



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- **require equity or subordinated debt capital to fuel profitable growth**
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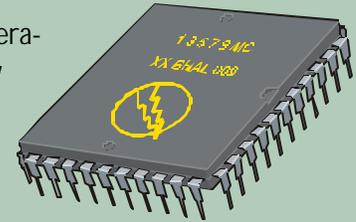
For more information,
call **919.530.1177**
or visit **www.sjfund.com**

E-Waste – *How Much Can We Expect?*

Is the e-waste problem a mountain or a molehill? A market assessment by DPPEA in 1998 estimated more than 50,000 tons of all types of electronics (TVs, VCRs, computers, audio equipment, telephones, etc.) being generated as discards annually in North Carolina (see: <http://www.p2pays.org/ref/02/0162206.pdf>). A subsequent analysis using EPA national solid waste characterization data came up with almost the exact same number – see: <http://www.p2pays.org/ref/14/13034.pdf>.

Other sources of data suggest that there are almost 1.8 million computers and about 6.7 million televisions currently in use in North Carolina households alone. Altogether this represents as much as 44 million pounds of lead potentially destined for disposal facilities. As many as 1.3 million CRTs are purchased every year in North Carolina by all users, although CRTs in computer monitor applications are losing market share to LCD screens. Using estimates developed for the NEPSI process, approximately 1.2 million CRTs become “available” for recycling or disposal in North Carolina each year.

Calculating actual generation becomes tricky because of the propensity of households and other users to store



nonfunctioning units and to keep old products even when buying new. Using some EPA estimates, it can be projected that about 60,000 CRTs are placed into storage in North Carolina every year. California data extrapolated to North Carolina finds that as many as 1.4 million CRTs are already in storage.

No matter which way the analysis goes, it is undeniable that obsolete electronics will grow in volume and complexity. Next on the horizon will be DVD players, personal CD players, flat panel televisions, personal digital assistants (PDAs), television game machines, etc. – one estimate puts the generation of discarded cell phones at 103 million in the United States by 2005. The challenges and opportunities of dealing with e-waste will only increase over time, tracking closely behind our seemingly insatiable appetite for technology.

Dealing, from cover

Businesses, government agencies and institutions break the law if they dispose of their obsolete CRTs without proof that they are not hazardous. On the positive side, many of these products have potential for direct reuse or reuse after refurbishing. As such, they can help close the digital divide. A recycling infrastructure built around these products can create jobs and tax base. And extracting the used materials from obsolete products means less reliance on the damaging extraction of the same materials from mines and wellheads all over the planet.

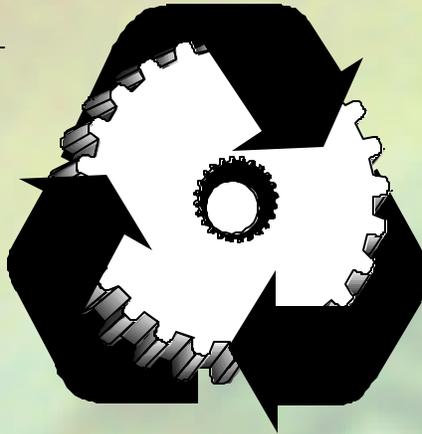
It is no wonder then that every level of government – local, state and federal – in addition to nonprofits, recycling companies, original equipment manufacturers (OEMs), policy organizations, commercial and industrial waste generators, and the public at large, are now trying to design, build and use a recovery system for electron-

ics. Perhaps the biggest challenge is that despite the high price we pay for electronic products and despite the value of the materials inside, it generally costs money to recycle them. Because of their complexity and low immediate value, discarded electronics – especially CRTs – are experiencing a “cost market.” It can be argued that there is more readily available recycling market value in the newspaper you paid 50 cents for this morning than the computer you purchased five years ago for \$2,000.

For society to capture the highly usable materials in electronic discards and divert them from disposal, someone will have to pay. If communities, states, the federal government, or a cooperative effort between government and industry can find an equitable answer to “who pays,” then the environmental and economic rewards from recovering electronic wastes will be enormous.

Two Positions Available with the North Carolina Recycling Business Assistance Center

The North Carolina Recycling Business Assistance Center (RBAC) is seeking qualified candidates for the position of **Industrial Development Specialist**. The successful candidate will provide assistance to North Carolina-based recycling companies and to recycling companies interested in locating in North Carolina, and will work closely with the N.C. Department of Commerce staff and other economic development service providers.



“Building a better recycling environment – one business at a time”

Candidates must have a strong recycling background and working knowledge of recycling business development principles, commodity issues, industry trends and strategies for reducing waste from a variety of sources. Candidates must also have excellent oral and written communication skills, and familiarity with word-processing, database and spreadsheet computer software programs.

RBAC is also seeking qualified candidates for the position of **Market Development Specialist**. The successful candidate will provide assistance to North Carolina-based recycling companies and to recycling companies interested in locating in North Carolina, especially those involved in the recycling of non-traditional materials such as construction and demolition debris, and electronics.

Both positions serve as a technical resource to business and industry on recycled material supply, product development and purchase, and access to potential financing and business assistance services. The positions require a strong emphasis on customer service, project management, and public relation skills.

Closing date for the positions is Dec. 4, 2002. Interested parties should contact Matt Ewadinger at (919) 715-6504 to learn more about applying. Resumes may be faxed to (919) 715-6794 or sent by e-mail to matt.ewadinger@ncmail.net. Candidates must fill out a state application form (PD 107), which can be downloaded at: <http://www.osp.state.nc.us/jobs/gnrinfo.htm#app>.

Recycling Works is published by the N.C. Recycling Business Assistance Center (RBAC), a program of the Division of Pollution Prevention and Environmental Assistance of the N.C. Department of Environment and Natural Resources (DENR). For more information call (919) 715-6500 or (800) 763-0136, or write to DPPEA, 1639 Mail Service Center, Raleigh, NC 27699-1639.

Michael F. Easley, Governor, North Carolina

William G. Ross Jr., Secretary, Department of Environment and Natural Resources

Division of Pollution Prevention and Environmental Assistance

Gary Hunt, Director

Scott Mouw, Chief, Community & Business Assistance Section

Matt Ewadinger, RBAC Manager

Jason Hale, RBAC Market Development Specialist

Diana Kees, DPPEA Information & Communications Specialist





The Recycling Business Assistance Center (RBAC) is a program of the North Carolina Division of Pollution Prevention and Environmental Assistance.

Call (919) 715-6500 or (800) 763-0136 for free technical assistance and information about preventing, reducing and recycling waste.



North Carolina market prices for recyclables

Prices current as of November 18, 2002*

Item	Western Region	Central Region	Eastern Region
METALS			
Aluminum Cans, lb. loose	\$0.50	\$0.38	\$0.49
Steel cans, gross ton baled	\$27	\$34	\$26
PLASTICS			
Central Region markets plastics together			
PETE, lb. baled	\$0.07	\$0.043	\$0.06
HDPE, lb. baled	\$0.17	\$0.043	\$0.16
PAPER			
Newsprint, ton baled	\$75	\$80	\$83
Corrugated, ton baled	\$65	\$65	\$68
Office, ton baled	\$135	n/a	\$130
Magazines, ton baled	**	\$80	***
Mixed, ton baled	\$35	n/a	\$43
GLASS			
Eastern Region sells glass F.O.B. origin			
Clear, ton crushed delivered	\$30	\$26.50	\$13
Brown, ton crushed delivered	\$20	\$16.50	\$9
Green, ton crushed delivered	\$10	(\$3.50)	(\$19)

*Central Region prices from October 2002.
 **Markets with mixed paper.
 ***Markets with newsprint.
 Note: Prices listed above are compiled by RBAC and are for reference only. These prices are not firm quotes. RBAC obtained pricing information from processors for each category and developed a pricing range.

Visit RBAC online at

<http://www.p2pays.org/rbac>

DPPEA-FY02-18



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