Commonwealth Edison

Dresden Station Units 2 and 3

NRC Docket Nos. 50-237/249

QUESTIONS AND ANSWERS

QUESTION A.1. Which of the following current techniques for at-reactor storage are you using and how?

A. Re-racking of spent fuel.

B. Control rod repositioning.

C. Above ground dry storage.

D. Longer fuel burnup.

E. Other (please identify).

RESPONSE for A.1

General: The first line strategy has been to complete all high-density spent fuel rack installation projects, for continued wet storage in the existing fuel pools. Newer racks have been designed for the capability to store consolidated fuel.

Station Specific:

Zion Units 1 and 2

- Shared pool has been re-racked twice. A third re-rack is in progress.
- will reach loss of full core discharge capability (LFCDC) in 1994 with existing racks.
- This additional re-racking modification will extend LFCDC to 2006.

Dresden Units 2 and 3

- both pools have been re-racked once.
- Dresden 2 will reach LFCDC in 1999 and Dresden 3 will reach LFCDC in 2000.

Quad Cities Units 1 and 2

- Shared pool has been re-racked once.
- will reach LFCDC in 2001.

LaSalle County, Byron and Braidwood

- initial re-rack effort completed or underway.
- will reach LFCDC in 2013, 2011 and 2012, respectively.

QUESTION A.2. Do you plan on continuing the use of these current techniques for reactor storage of spent fuel during the remaining time of your operating license or do you expect to change or modify them in some way?

QUESTION A.3. Which of the following techniques for at-reactor storage do you anticipate using until off-site spent fuel storage becomes available and how?

A. Re-racking of spent fuel.

B. Control rod repositioning.

C. Above ground dry storage.

D. Longer fuel burnup.

F. Other (please identify).

RESPONSE for A.2 and A.3

Zion

- new racks will provide storage through the year 2006.
- will change to fuel rod consolidation or above ground dry storage after 2005 and employ through or beyond 2011.

Dresden

- pending results for structural evaluations and demonstration of such technology for BWR fuel, will change to fuel rod consolidation after 1999 (Dresden 2) and 2000 (Dresden 3) and employ the option through or beyond 2011.

Quad Cities

- pending results of structural evaluations and demonstration of such technology for BWR fuel, will change to fuel rod consolidation after 2005 and employ the option through or beyond 2011.

LaSalle County, Byron and Braidwood

- will continue to wet-store fuel in high density array using current technique through at least 2011.

QUESTION A.4. Will the techniques described above be adequate for continued at-reactor storage of spent fuel for the operating lifetime of the plant, including a 20-year period of license renewal, or are you developing other plans?

RESPONSE for A.4 (For all 6 Stations)

Yes. Commonwealth Edison believes that rod consolidation and/or above ground dry storage will be adequate for the operating lifetime of the plants. Construction of new storage facilities, either at a particular plant site or an off-site location to receive spent fuel from one or from several plants, appears to be technically feasible but is likely to be very expensive for wet pools as compared to dry storage technologies.

QUESTION A.5. Do you anticipate the need to acquire additional land for the storage of spent-fuel for the operating lifetime of the plant, including a 20-year period of license renewal? If so, how much land? When would this acquisition occur? Where? (If answer is "yes", 3 - 4 sentences.)

RESPONSE for A.5 (For all 6 Stations)

No.

QUESTION A.6. Do you anticipate any additional construction activity on-site, or immediately adjacent to the power plant site, associated with the continued at-reactor storage of spent fuel for the operating lifetime of the plant, including a 20-year period of license renewal? (yes/no)

RESPONSE for A.6 (For all 6 Stations)

- Dry storage facility construction may be opted for Zion Station for spent fuel storage after the year 2006.
- For remaining stations through the year 2011 -- NO
- Beyond the year 2011 (for all stations) -- PROBABLY

QUESTION A.7. If you answered yes to question 6, briefly describe this construction activity (e.g. expansion of fuel storage pool, building above ground dry storage facilities).

RESPONSE for A.7 (For all 6 Stations)

Any construction activity would be related to facilities built in connection with above ground dry storage.

Henry E. Bliss

cc: Spent Fuel Task Force Members
P. J. Garnier-Davis
P. G. Kuhel/S. G. Miller
L. B. Wilson

4518d:4

Dresden Station
R.R. #1,
Morris, Illinois 60450

NRC Docket #	Initial Operating License	Current License Expiration	Proposed Licens Expiration
50-237	12/22/69	No FTOL	12/22/2009
50-249	0?/12/71	1/12/2011	01/12/2011

B.Low-level radioactive waste management questions:

1. Under the current scheme for LLRW Disposal (i.e. LLRW Policy Amendments Act of 1985 and regional compacts) is there currently or will sufficient capacity for wastes generated during the license renewal period be available to your plant(s)? If so, what is the basis for this conclusion?

Yes. The Illinois Department of Nuclear Safety (IDNS) low-level waste facility is designed for 50 year disposal period with an anticipated annual volume of 200,000 cubic feet per year. In the last three years the Central Midwest Compact (CMC) has disposed under 200,000 cubic feet each year.

2. If for any reason your plant(s) is/are denied access to a licensed disposal site for a short period of time, what plans do you have for continued LLRW disposal?

If the station is denied access to a disposal site, Dresden Station has on site an Interim Radwaste Storage Facility (IRSF). The design of facility will only accommodate 2 years of waste storage. Currently, this facility is designed for interim storage solidified waste only. At the present time, the station does not have storage capacity for DAW. A generic DAW storage building has been designed for the each of the 6 CECo facilities. This building could hold up to approximately 2 - 5 years generation of DAW. Depending on the length of time the station is shut out of a disposal site, actions would be taken to initiate the construction of the DAW storage building. The station will also to pursue further volume reduction techniques such as incineration, smelting, sort segregation etc. that are not currently in use.

3. In a couple of pages please describe the specific methods of LLRW management currently utilized by your plant. What percentage of your current LLRW (by volume) is managed by:

I. Dry Active Waste (DAW) (Packaged in Final Form)

A. Waste compaction?

Description	% of total Volume
Hot DAW and sand blast grit	13.1
Precompacted drums sent to waste processor for supercompaction.	25.8
Waste shipped to Waste Processor as bulk DAW in Sea Land containers. The Waste Processor sorts, segregates, packages and supercompacts the waste.	11.6

B. Waste segregation (through special controls or segregation at radiation check point)?

The station has in place a dual trash can system where by potentially contaminated material is put in a specially designated trash car and contaminated waste is put in an alternate color trash can. Each bag is surveyed. If the bag is less than an administrative limit, the bag is segregated for release.

C. Decontamination of wastes?

D. Sorting of waste prior to shipment?

To the extent practical the station or in the case of bulk DAW, the waste processor sorts the majority of the DAW. Roughly 87 - 90% of the total volume of DAW buried is sorted for items which can be decontaminated and reused or released as clean material.

E. Other (please specify)

Description	% of total Volume
Incineration	0.0
Absorbed Oily Waste	0.0
Demin Elements	0.0
Filter Cartridges (in HICs)	0.5
Activated Hardware	1.9

II. Wet Waste (Packaged in Final Form)

Description	% of total Volume
A. Resins: Solidification	1.7
Dewatering	21.0
B. Concentrator Waste (solidified)	2.7
C. Sludge	0.3
D. Waste Water Treatment Facility Waste	0.0
E. Decon Waste	0.0
F. Solidified Oil *	15.0

(* Note: In future years solidified oil will constitute less t
1-2 %. This large volume was due to a backlog of ma

4. In a couple of pages, please describe the anticipated plans for LLRW management to be utilized by your plant(s) during the remainder of the operating license and through the license license renewal term. What percentage of your anticipated waste (by volume) will be managed by:

I. Dry Active Waste (Packaged in Final Form)

A. Waste compaction?

Description	% of total Volume
Hot DAW, miscellaneous waste precompacted onsite, sand blast grit and other flowable materials	8.0
Precompacted drums sent to waste processor for supercompaction.	0.0
Waste shipped to Waste Processor as bulk DAW in Sea Land containers. The Waste Processor sorts, segregates, packages and supercompacts the waste.	See Incineration

B. Waste segregation (through special controls or segregation at radiation check point)?

No change anticipated from response 3.I.B

C.

D. Sorting of waste prior to shipment?

No change anticipated from question 3.I.D.

E. Other (please specify)

Description	% of total Volume
Incineration	30.0
Absorbed Oily Waste	0
Demin Elements	0.0
Filter Cartridges (in HICs)	0.5
Activated Hardware	2.0
Decon Waste	6.0

II. Wet Waste (Packaged in Final Form)

Description	% of total Volume
A. Resins:	
Solidification *	49.0
Dewatering	0.0
B. Concentrator Waste (solidified)	3.0
C. Sludge	0.3
D. Waste Water Treatment Facility Waste	0.0
E. Decon Waste (primary system decon)	1.0
F. Solidified Oil	.5

(* Note: 100% of the resin will be solidified as mandated in the IDNS draft waste form rules.)

5. Do you anticipate the need to acquire additional land for the storage of LLRW for the operating lifetime of the plant, including a 20 year pericd of license renewal? If so, how much land? When would this acquisition occur? Where? (if answer is "yes", 3-4 sentences) No.

6. To provide information on the timing of future low-level waste streams, if you answered yes to question #9, over what periods of time are these activities contemplated?

Refer to question 9.

7. Do you anticipate any additional construction activity, on-site, or immediately adjacent to the power plant site, associated with temporary LLRW storage for the operating lifetime of the plant, including a 20-year period of license renewal? (yes/no) Yes

8. If you answered yes to question 7, briefly describe this construction activity (e.g. storage areas for steam generator components or other materials exposed to reactor environment

Depending on the length of time the station is shut do of disposal facility, one DAW storage building may be built

9. To provide information on future low-level waste streams which may effect workforce levels, exposure, and waste compact planning, do you anticipate any major plant modifications or refurbishment that are likely to generate unusual volumes of low-level radioactive waste prior to, or during, the relicensing period for the plant? If so, please describe these activities. Also, what types of modifications do you anticipate to be necessary to achieve license renewal operation through a 20-year license renewal term?

The station plans to dispose of 5 heating boilers and associated piping in 1991. The current plans are to cut up the piping and send the material to a waste processor for decontmination.

At the present time the station is in the midst of a major upgrade of the radwaste systems. The project will require the removal of the old GE solidification system including the centrifuge and associated piping. The station anticipates approximately 2500 - 3000 linear feet of pipe will be replaced.

The station is currently assessing the need to remove and dispose of Roofing material. It is estimated that this job will generate approximately 2400 cubic feet of uncompacted material.

Post strainer and under drain modification has been identified as a potential modification to be performed with in the next 10 years.

Responses to Aquatic Resource Questions

DRESDEN GENERATING STATION

Question 1

Units 2 and 3 at Dresden were designed to be operated open cycle for the condenser cooling water system. Because of changes in environmental laws and regulations - the cooling system was modified to closed cycle utilizing a cooling pond and spray canals. The station began operating in this mode in 1974. Beginning in the summer of 1977 a modified closed cycle mode of operation was put into operation. The daily adjusted variable blowdown consisted of adjusting the blowdown rate between 111 and 115 cfs on a daily basis. Starting in June 1981, the operation was again modified during the summer months (June 15th through September 30th to operate in indirect open cycle. Under this operation, the cooling water from the plant would pass through the closed cycle system (spray canals and cooling pond) then be discharged into the Illinois River. Aquatic monitoring and plume survey were employed to support the efficiency of this mode of operation. Unit 1 was operated open cycle for the life of the unit.

Question 2

There exists no documentation of any adverse impacts on aquatic resources due to operation of Dresden Station. Since January, 1984 there have been a total of 44 violations of the Station's NPDES permit (through May, 1990), and no enforcement actions by EPA. Permit violation records prior to 1984 are not readily available but can be retrieved from the Company archives if necessary.

Question 3

Since the issuance of Dresden Station's Operating license, the NPDES permit was renewed or significantly modified on ten occasions. None of the permit revisions were precipitated by new concerns over water quality impacts. Rather two permit revisions/renewals (in 1976 and 1979) primarily involved incorporation of tighter federal effluent standards for the industry which prompted construction of onsite miscellaneous wastewater treatment systems that additionally required licensing under the NPDES permit. To a lesser extent some changes to the permit involved the relaxation of certain operating requirements such as the October, 1980 permit modification allowing limited operation of the cooling pond with indirect open cycle discharges during the summer months. Another, in July, 1987, relieved the Company of the requirement to perform instream thermal monitoring during summer months when the cooling pond is operated with indirect open cycle cooling. The balance of permit changes scattered over the years 1976-88 concerned mostly insignificant technical corrections and clarifications to the wording of permit conditions and outfall descriptions.

Question 4

Dresden Unit 1 operated from August, 1960 until October 1978 when it was taken out of service for decontamination and back fitting. The unit was retired without ever returning to service. Unit 2 went into service in August 1980 followed by Unit 3 in November, 1971. We began our aquatic sampling program in 1971 and it has continued through the present.

Enclosed is a copy of the 1990 report entitled "Final Report Dresden Station Aquatic Monitoring, 1989" The report discusses historical changes and includes summary tables. The most pronounced change is the higher number of fish species currently present in the area. The mean number of species is is 30% higher in the 80's than in the 70's. However in the 80's the total number of species have remained essentially unchanged. Throughout the study years gizzard shad, emerald shiner, green sunfish, carp and smallmouth bass have been among the most common species in the collection. A total of 93 fish species, has been reported from the river studies near Dresden Station including three species recently listed as endangered (pallid chub, greater redhorse) and threatened (river redhorse).

Question 5

A 316"b" demonstration was submitted in February 1977 and included impingement results (December 75 - December 76) and entrainment results (April - August, 76). This demonstration, which is attached, was not approved by the USEPA. They responded in December 1977 with a requirement for Edison to build a new intake structure. We then had to provide documentation (new studies) to prove our contention that the majority of the fish impinged came from our cooling pond and that the pond acted as a nursery contributing eggs, larvae and juveniles, back to the river. We were able to provide enough evidence to reverse the decision. The end result of this process and obtaining permission to operate in indirect open-cycle mode during the summer was additional impingement studies, from 1977 - 1978 and 1981 - 1986. In 1987 we were able to obtain permission to drop impingement sampling due to no adverse impact. The impingement studies are discussed in the attached 1987 report "Final Report Dresden Station Aquatic Monitoring 1986". The impingement section begins on page 145 and ends on 182 of that report. These studies were conducted under two different modes of operation 1) variable blowdown (77-78) and 2) indirect open cycle (81-86). The higher numbers impinged under variable blowdown reflect the contribution of fish from the cooling pond.

Question 6

Nothing has happened to either enhance or degrade the biological resource near the site. Improvements in water quality related to tighter controls on and improved water treatment processes by dischargers upstream in the DesPlaines River System may not result in greatly changed fish population for Dresden. One reason relates to the toxic sediments that are resuspended during the constant barge traffic. Another reason relates to the siting of the station at the confluence of the degraded Des Plaines River and the much higher quality Kankakee River to form the Illinois River. The water that enters the intake is a varying mixture of the two rivers and the discharge is into the Illinois River. The station's intake and discharge are in areas that are influenced greatly by Kankakee River water. Our impact assessments already are concerned with a fish community that comes from a good quality stream as well as the fish populations from the Des Plaines.

Question 7

The Illinois River in the vicinity of the station has very little recreational fishing but does have some boating although both activities are increasing as water quality improves. There is no commercial fishing in the area because the water quality is still poor. We have not identified any impacts on the use of the Illinois River by others due to the operation of the Dresden Station.

Question 8

Dresden Station discharges effluents to the Illinois River. The Illinois River has a long history of environmental insults dating back to the 1800's, when flows in the Chicago River were reversed so untreated sewage should be discharged through the Illinois River system and away from Lake Michigan. While significant recover of the river system has occurred, particularly over the last 10 years, numerous impacts on aquatic resources continue including: the existence of dozens of municipal sewage plant discharges; dozens of direct and indirect industrial discharges of process wastewaters; urban, rural and agricultural runoff; heavy large shipping traffic; operation of locks and dams; the presence of toxics in contaminated river sediments; and persistant dredging activities. Commonwealth Edison has not studied the Cumulative impacts of these influences to enable one to accurately assess their relative contributions on water quality degradation.

DRESDEN

Question 9

316"b" - Submitted in Feb, 1977, report attached approved after agreeing to additional monitoring impingement.

316"a" Submitted in December, 1980, report attached approved July 9, 1981

8447e
RGM:ssp

ATTACHMENTS TO AQUATIC RESOURCE QUESTIONS

BRAIDWOOD STATION

Braidwood Generating Station
Makeup Water Intake System
February, 1977

Braidwood Station
Kankakee River Fishes of the Braidwood Station Aquatic Monitoring Area, July - August 1989
January 1990

Braidwood Nuclear Station
Entrainment and Impingement Studies
January 1990

BYRON STATION

Byron Generating Station
Impingement Monitoring
1985 - 1986
October, 1986

Byron Generating Station
Impingement Monitoring
1987 - 1988
August, 88

Byron Generating Station
Fish and Aeromonas Hydrophila Monitoring Program, 1989
March, 1990

DRESDEN STATION

Dresden Generating Station
Cooling Water Intake Impact Report
February 28, 1977

Dresden Nuclear Generating Station
316(a) - 410(c) Demonstration
December 5, 1980

Final Report Dresden Station Aquatic Monitoring 1986
January 1987

Final Report Dresden Station Aquatic Monitoring, 1989
February, 1990

LASALLE STATION

LaSalle Generating Station
Makeup Water Intake System
November 21, 1976

QUAD CITIES

Quad Cities Nuclear Station
Three Sixteen a & b Demonstration
February, 1975

Quad Cities Nuclear Station
Supplement to 316a & b demonstration
March 16, 1981

Quad Cities Aquatic Program
1988 Annual Report Vol I
Feb 89

Quad Cities Aquatic Program
1988 Annual Report Vol II
Feb 1989

ZION STATION

Zion Vol I
316 "a" & Related Material
Dec "74"

Zion Vol II
316 "a" & Related Material
Sept 1976

Zion & Waukegan Generating Station
Supplemental Information in Support of Alternative Effluent Limitations
December 1976

Zion Generating Station
Entrainment & Impingement Studies Vol I, 1976
March 1976

Zion Generating Station
Entrainment & Impingement Studies Vol II, 1976
March 1976

Zion Station
Environmental Monitoring in Lake Michigan
June 1970 through Sept 1978
June 1979

8487e

Subject: Results of Socioeconomic Questions 1 and 2 for NUMARC Survey

Question 1: Number of permanent workers on-site for 1989. (on-site CECo and guards)

Braidwood:	839
Byron:	875
Dresden:	1,222
LaSalle:	863
Quad Cities:	724
Zion:	796

Question 2: Average number of permanent workers on-site, in five-year increments starting with the issuance of the plant's OL.

Byron:	1984-1988	773
	1989	875
Braidwood:	1986-1989	820
Dresden:	1972-1976	474
	1977-1981	1064
	1982-1986	1317
	1987-1989	1227
LaSalle:	1982-1986	767
	1987-1989	838
Quad Cities:	1972-1976	292
	1977-1981	616
	1982-1986	666
	1987-1989	694
Zion:	1973-1977	412
	1978-1982	696
	1983-1987	722
	1988-1989	813

In answer to your June 28, 1990 request, attached is a summary listing the monies paid to the various taxing districts as related to our nuclear stations. The two years listed include 1985 taxes (paid in 1986) and our latest year, 1989 taxes (payable in 1990).

As we discussed, the monies are attributed to the large tax parcels we identify as the "station" and we estimate this represents the majority of money we pay to the individual taxing districts. For instance, a station (including the cooling lake) may consist of numerous small tax parcels but the majority of monies (90%+) are generated by the parcels on which the station buildings are located. Additionally, we have paid actually one-half of total amount listed for 1989 taxes. The remaining one-half will be paid by September 1, 1990.

Station/Taxing Districts	1985 Taxes (Paid in 1986)	1989 Taxes (Payable in 1990
Braidwood		
Forest Preserve	$ 580,297.28	$1,658,149.78
Will County Building Commission	990,086.05	832,176.72
Reed Township	33,533.34	63,809.08
Reed Township Road & Bridge	68,203.40	108,120.94
Reed Township General Assistance	20,461.02	15,952.27
Braidwood Fire District	231,891.57	743,553.00
School District 255-U (Grade School)	7,143,169.64	9,304,604.24
Community College District 525	1,381,118.89	2,151,783.89
Godley Park District	157,975.57	1,025,376.43
County (Will) Funds	2,896,371.18	5,820,805.85
Fossil Ridge Public Library	98,894.94	564,533.09
Reed Twp. v. Mosquito Abatement	--	221,559.30
Lawsuit versus County	--	225,104.27
	$13,602,002.88	$22,735,528.86
Byron		
County (Ogle)	$ 2,182,730.39	2,771,890.64
General (Ogle County)	86,137.40	--
Ogle County Road & Bridge	605,148.01	--
District School 226(Now: Byron Unit 2)	5,888,994.34	12,611,082.78
District School 220 (Now: Oregon)	390,131.05	506,628.61
Junior College 511 (Now: J.C. 51)	1,168,593.32	1,861,216.08
Junior College 523	27,170.34	47,310.61
Byron Fire District	622,637.83	920,924.57
Oregon Park District	920,402.14	1,271,682.78
Byron Library	93,133.33	172,622.17
Byron Forest Preserve District	259,723.93	861,636.88
Rockvale Township	--	396,124.76
	$12,244,802.08	21,421,119.88
Dresden		
Grundy County	$ 516,279.22	$ 672,348.14
Gooselake Township	5,375.30	17,901.74
General Assistance (Grundy County)	625.04	--
Grundy County Road & Bridge	25,001.41	77,115.20
Road & Bridge (Gooselake Township)	4,500.26	172,132.14
Unit School 1 (Grade School)	3,086,674.70	4,471,648.73
Joliet Junior College 525	303,017.15	417,076.18
Coal City Fire District 5	60,003.40	69,713.52
Coal City Library	--	238,403.07
	$ 4,001,476.48	$ 6,136,338.66

LaSalle		
T.B. Sanitarium	$ 45,550.36	$ 157,985.90
County Highway (LaSalle)	396,104.28	347,987.84
County Bridge (LaSalle)	96,251.68	173,992.82
Mental Health (LaSalle County)	337,480.74	334,415.80
Other County Funds	1,587,994.03	1,183,162.62
Brookfield Township	871,828.54	758,266.12
Seneca High School 160	2,361,185.82	3,244,293.24
Seneca Grade School 170	2,432,088.72	2,838,887.08
Junior College 513 (Now: I.V. Comm. Coll.)	699,522.58	731,819.02
Seneca Fire District	115,068.69	117,272.00
Marseilles Fire District	90,708.20	153,462.76
Brookfield/Allen Assessor	8,714.32	8,699.70
Seneca Library District	-	307,621.50
	$ 9,042,497.96	$10,357,866.40
Quad Cities (75%-C.E.Co.'s portion)		
County (Rock Island) Taxes	$ 105,531.00	124,430.27
Cordova Township	22,132.80	22,693.30
Road & Bridge (Cordova Township)	20,149.20	15,001.25
School District Unit 1 (Grade School)	527,202.60	550,382.06
Cordova Fire District	20,462.40	54,575.29
Cordova Library	6,925.20	24,224.75
Blackhawk College 503	45,031.20	73,370.36
	$ 747,434.40	$864,677.28
Zion		
County (Lake)	$ 888,708.27	$989,927.34
County Road & Bridge Fund (Lake)	172,108.99	--
T.B. Sanitorium	7,823.14	--
Forest Preserve	240,952.58	254,603.62
Zion Park District	990,498.96	1,322,870.52
City of Zion	1,739,865.34	2,175,703.60
College of Lake County 532	342,653.34	445,111.21
High School No. 126	3,554,832.65	4,095,023.09
Township (Zion)	251,904.97	425,526.32
North Shore Sanitary District	519,456.20	439,769.88
Zion-Benton Public Library	256,598.85	345,406.30
School District No. 6 (Grade School)	3,659,662.79	5,457,063.44
	$12,624,976.08	$15,951,005.32

Commonwealth Edison

Dresden Station Units 2 and 3

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Responses to Aquatic Resource Questions

DRESDEN GENERATING STATION

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Question 3

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DRESDEN

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Enclosed is a copy of the 1990 report entitled "Final Report Dresden Station Aquatic Monitoring, 1989" The report discusses historical changes and includes summary tables. The most pronounced change is the higher number of fish species currently present in the area. The mean number of species is is 30% higher in the 80's than in the 70's. However in the 80's the total number of species have remained essentially unchanged. Throughout the study years gizzard shad, emerald shiner, green sunfish, carp and smallmouth bass have been among the most common species in the collection. A total of 93 fish species, has been reported from the river studies near Dresden Station including three species recently listed as endangered (pallid chub, greater redhorse) and threatened (river redhorse).

Question 5

A 316"b" demonstration was submitted in February 1977 and included impingement results (December 75 - December 76) and entrainment results (April - August, 76). This demonstration, which is attached, was not approved by the USEPA. They responded in December 1977 with a requirement for Edison to build a new intake structure. We then had to provide documentation (new studies) to prove our contention that the majority of the fish impinged came from our cooling pond and that the pond acted as a nursery contributing eggs, larvae and juveniles, back to the river. We were able to provide enough evidence to reverse the decision. The end result of this process and obtaining permission to operate in indirect open-cycle mode during the summer was additional impingement studies, from 1977 - 1978 and 1981 - 1986. In 1987 we were able to obtain permission to drop impingement sampling due to no adverse impact. The impingement studies are discussed in the attached 1987 report "Final Report Dresden Station Aquatic Monitoring 1986". The impingement section begins on page 145 and ends on 182 of that report. These studies were conducted under two different modes of operation 1) variable blowdown (77-78) and 2) indirect open cycle (81-86). The higher numbers impinged under variable blowdown reflect the contribution of fish from the cooling pond.

uestion 6

Nothing has happened to either enhance or degrade the biological resource near the site. Improvements in water quality related to tighter controls on and improved water treatment processes by dischargers upstream in the DesPlaines River System may not result in greatly changed fish population for Dresden. One reason relates to the toxic sediments that are resuspended during the constant barge traffic. Another reason relates to the siting of the station at the confluence of the degraded Des Plaines River and the much higher quality Kankakee River to form the Illinois River. The water that enters the intake is a varying mixture of the two rivers and the discharge is into the Illinois River. The station's intake and discharge are in areas that are influenced greatly by Kankakee River water. Our impact assessments already are concerned with a fish community that comes from a good quality stream as well as the fish populations from the Des Plaines.

Question 7

The Illinois River in the vicinity of the station has very little recreational fishing but does have some boating although both activities are increasing as water quality improves. There is no commercial fishing in the area because the water quality is still poor. We have not identified any impacts on the use of the Illinois River by others due to the operation of the Dresden Station.

Question 8

Dresden Station discharges effluents to the Illinois River. The Illinois River has a long history of environmental insults dating back to the 1800's, when flows in the Chicago River were reversed so untreated sewage should be discharged through the Illinois River system and away from Lake Michigan. While significant recover of the river system has occurred, particularly over the last 10 years, numerous impacts on aquatic resources continue including: the existence of dozens of municipal sewage plant discharges; dozens of direct and indirect industrial discharges of process wastewaters; urban, rural and agricultural runoff; heavy large shipping traffic; operation of locks and dams; the presence of toxics in contaminated river sediments; and persistant dredging activities. Commonwealth Edison has not studied the Cumulative imparts of these influences to enable one to accurately assess their relative contributions on water quality degradation.

DRESDEN

Question 9

316"b" - Submitted in Feb, 1977, report attached approved after agreeing to additional monitoring for impingement.

316"a" Submitted in December, 1980, report attached approved July 9, 1981

8447e
RGM:ssp

ATTACHMENTS TO AQUATIC RESOURCE QUESTIONS

BRAIDWOOD STATION

Braidwood Generating Station
Makeup Water Intake System
February, 1977

Braidwood Station
Kankakee River Fishes of the Braidwood Station Aquatic Monitoring Area, July - August 1989
January 1990

Braidwood Nuclear Station
Entrainment and Impingement Studies
January 1990

BYRON STATION

Byron Generating Station
Impingement Monitoring
1985 - 1986
October, 1986

Byron Generating Station
Impingement Monitoring
1987 - 1988
August, 88

Byron Generating Station
Fish and Aeromonas Hydrophila Monitoring Program, 1989
March, 1990

DRESDEN STATION

Dresden Generating Station
Cooling Water Intake Impact Report
February 28, 1977

Dresden Nuclear Generating Station
316(a) - 4?0(c) Demonstration
December 5, 1980

Final Report Dresden Station Aquat' Monitoring 1986
January 1987

Final Report Dresden Station Aquatic Monitoring, 1989
February, 1990

LASALLE STATION

LaSalle Generating Station
Makeup Water Intake System
November 21, 1976

QUAD CITIES

Quad Cities Nuclear Station
Three Sixteen a & b Demonstration
February, 1975

Quad Cities Nuclear Station
Supplement to 316a & b demonstration
March 16, 1981

Quad Cities Aquatic Program
1988 Annual Report Vol I
Feb 89

Quad Cities Aquatic Program
1988 Annual Report Vol II
Feb 1989

ZION STATION

Zion Vol I
316 "a" & Related Material
Dec "74"

Zion Vol II
316 "a" & Related Material
Sept 1976

Zion & Waukegan Generating Station
Supplemental Information in Support of Alternative Effluent Limitations
December 1976

Zion Generating Station
Entrainment & Impingement Studies Vol I, 1976
March 1976

Zion Generating Station
Entrainment & Impingement Studies Vol II, 1976
March 1976

Zion Station
Environmental Monitoring in Lake Michigan
June 1970 through Sept 1978
June 1979

8487e

Subject: Results of Socioeconomic Questions 1 and 2 for NUMARC Survey

Question 1: Number of permanent workers on-site for 1989. (on-site CECo and guards)

Braidwood:	839
Byron:	875
Dresden:	1,222
LaSalle:	863
Quad Cities:	724
Zion:	796

Question 2: Average number of permanent workers on-site, in five-year increments starting with the issuance of the plant's OL.

Byron:	1984-1988	773
	1989	875
Braidwood:	1986-1989	820
Dresden:	1972-1976	474
	1977-1981	1064
	1982-1986	1317
	1987-1989	1227
LaSalle:	1982-1986	767
	1987-1989	838
Quad Cities:	1972-1976	292
	1977-1981	616
	1982-1986	666
	1987-1989	694
Zion:	1973-1977	412
	1978-1982	696
	1983-1987	722
	1988-1989	813

In answer to your June 28, 1990 request, attached is a summary listing the monies paid to the various taxing districts as related to our nuclear stations. The two years listed include 1985 taxes (paid in 1986) and our latest year, 1989 taxes (payable in 1990).

As we discussed, the monies are attributed to the large tax parcels we identify as the "station" and we estimate this represents the majority of money we pay to the individual taxing districts. For instance, a station (including the cooling lake) may consist of numerous small tax parcels but the majority of monies (90%+) are generated by the parcel on which the station buildings are located. Additionally, we have paid actually one-half of total amount listed for 1989 taxes. The remaining one-half will be paid by September 1, 1990.

Station/Taxing Districts	1985 Taxes (Paid in 1986)	1989 Taxes (Payable in 1990)
Braidwood		
Forest Preserve	$ 580,297.28	$1,658,149.78
Will County [illegible]lding Commission	990,086.05	832,176.72
Reed Township	33,533.34	63,809.08
Reed Township Road & Bridge	68,203.40	108,120.94
Reed Township General [illegible]ance	20,461.02	15,952.27
Br[illegible] District	231,891.57	743,553.00
S[illegible] 255-U (Grade School)	7,143,169.64	9,304,604.24
District 525	1,381,118.89	2,151,783.89
[illegible]	157,975.57	1,025,376.43
[illegible]	2,896,371.18	5,820,805.85
[illegible]rary	98,894.94	564,533.09
[illegible]atement	--	221,559.30
[illegible]	--	225.104.27
	$13,602,002.88	$22,735,528.86
Byron		
Gove[illegible]	$ 2,182,730.39	2,771,890.64
Gene[illegible]	86,137.40	--
[illegible]ge [illegible] Bridge	605,148.01	--
Dis[illegible](Now: Byron Unit 2)	5,888,994.34	12,611,082.78
D[illegible] (Now: Oregon)	390,131.05	506,628.61
Junior Col[illegible] 11 (Now: J.C. 51)	1,168,593.32	1,861,216.08
Junior College 523	27,170.34	47,310.61
Byron Fire District	622,637.83	920,924.57
Oregon Park District	920,402.14	1,271,682.78
Byron Library	93,133.33	172,622.17
Byron Forest Preserve District	259,723.93	861,636.88
Rockvale Township	--	396,124.76
	$12,244,802.08	21,421,119.88
Dresden		
Grundy County	$ 516,279.22	$ 672,348.14
Gooselake Township	5,375.30	17,901.74
General Assistance (Grundy County)	625.04	--
Grundy County Road & Bridge	25,001.41	77,115.20
Road & Bridge (Gooselake Township)	4,500.26	172,132.14
Unit School 1 (Grade School)	3,086,674.70	4,471,648.73
Joliet Junior College 525	303,017.15	417,076.18
Coal City Fire District 5	60,003.40	69,713.52
Coal City Library	--	238,403.01
	$ 4,001,476.48	$ 6,136,338.66

LaSalle		
T.B. Sanitarium	$ 45,550.36	$ 157,985.90
County Highway (LaSalle)	396,104.28	347,987.84
County Bridge (LaSalle)	96,251.68	173,992.82
Mental Health (LaSalle County)	337,480.74	334,415.80
Other County Funds	1,587,994.03	1,183,162.62
Brookfield Township	871,828.54	758,266.12
Seneca High School 160	2,361,185.82	3,244,293.24
Seneca Grade School 170	2,432,088.72	2,838,887.08
Junior College 513 (Now: I.V. Comm. Coll.)	699,522.58	731,819.02
Seneca Fire District	115,068.69	117,272.00
Marseilles Fire District	90,708.20	153,462.76
Brookfield/Allen Assessor	8,7 .32	8,699.70
Seneca Library District		307,621.50
	$ 9,042,497.96	$10,357,866.40
Quad Cities (75%-C.E.Co.'s portion)		
County (Rock Island) Taxes	$ 105,531.00	124,430.27
Cordova Township	22,132.80	22,693.30
Road & Bridge (Cordova Township)	20,149.20	15,001.25
School District Unit 1 (Grade School)	527,202.60	550,382.06
Cordova Fire District	20,462.40	54,575.29
Cordova Library	6,925.20	24,224.75
Blackhawk College 503	45,031.20	73,370.36
	$ 747,434.40	$864,677.28
Zion		
County (Lake)	$ 888,708.27	$989,927.34
County Road & Bridge Fund (Lake)	172,108.99	--
T.B. Sanitorium	7,823.14	--
Forest Preserve	240,952.58	254,603.62
Zion Park District	990,498.96	1,322,870.52
City of Zion	1,739,865.34	2,175,703.60
College of Lake County 532	342,653.34	445,111.21
High School No. 126	3,554,832.65	4,095,023.09
Township (Zion)	251,904.97	425,526.32
North Shore Sanitary District	519,456.20	439,769.88
Zion-Benton Public Library	256,598.85	345,406.30
School District No. 6 (Grade School)	3,659,662.79	5,457,063.44
	$12,624,976.08	$15,951,005.32

QUESTIONS AND ANSWERS

QUESTION A.1. Which of the following current techniques for at-reactor storage are you using and how?

A. Re-racking of spent fuel.

B. Control rod repositioning.

C. Above ground dry storage.

D. Longer fuel burnup.

E. Other (please identify).

RESPONSE for A.1

General: The first line strategy has been to complete all high-density spent fuel rack installation projects, for continued wet storage in the existing fuel pools. Newer racks have been designed for the capability to store consolidated fuel.

Station Specific:

Zion Units 1 and 2

- Shared pool has been re-racked twice. A third re-rack is in progress.
- will reach loss of full core discharge capability (LFCDC) in 1994 with existing racks.
- This additional re-racking modification will extend LFCDC to 2006.

Dresden Units 2 and 3

- both pools have been re-racked once.
- Dresden 2 will reach LFCDC in 1999 and Dresden 3 will reach LFCDC in 2000.

Quad Cities Units 1 and 2

- Shared pool has been re-racked once.
- will reach LFCDC in 2001.

LaSalle County, Byron and Braidwood

- initial re-rack effort completed or underway.
- will reach LFCDC in 2013, 2011 and 2012, respectively.

QUESTION A.2. Do you plan on continuing the use of these current techniques for reactor storage of spent fuel during the remaining time of your operating license or do you expect to change or modify them in some way?

QUESTION A.3. Which of the following techniques for at-reactor storage do you anticipate using until off-site spent fuel storage becomes available and how?

A. Re-racking of spent fuel.

B. Control rod repositioning.

C. Above ground dry storage.

D. Longer fuel burnup.

E. Other (please identify).

RESPONSE for A.2 and A.3

Zion

- new racks will provide storage through the year 2006.
- will change to fuel rod consolidation or above ground dry storage after 2006 and employ through or beyond 2011.

Dresden

- pending results for structural evaluations and demonstration of such technology for BWR fuel, will change to fuel rod consolidation after 1999 (Dresden 2) and 2000 (Dresden 3) and employ the option through or beyond 2011.

Quad Cities

- pending results of structural evaluations and demonstration of such technology for BWR fuel, will change to fuel rod consolidation after 2005 and employ the option through or beyond 2011.

LaSalle County, Byron and Braidwood

- will continue to wet-store fuel in high density array using current technique through at least 2011.

QUESTION A.4. Will the techniques described above be adequate for continued at-reactor storage of spent fuel for the operating lifetime of the plant, including a 20-year period of license renewal, or are you developing other plans?

RESPONSE for A.4 (For all 6 Stations)

Yes. Commonwealth Edison believes that rod consolidation and/or above ground dry storage will be adequate for the operating lifetime of the plants. Construction of new storage facilities, either at a particular plant site or an off-site location to receive spent fuel from one or from several plants, appears to be technically feasible but is likely to be very expensive for wet pools as compared to dry storage technologies.

QUESTION A.5. Do you anticipate the need to acquire additional land for the storage of spent-fuel for the operating lifetime of the plant, including a 20-year period of license renewal? If so, how much land? When would this acquisition occur? Where? (If answer is "yes", 3 - 4 sentences.)

RESPONSE for A.5 (For all 6 Stations)

No.

QUESTION A.6. Do you anticipate any additional construction activity on-site, or immediately adjacent to the power plant site, associated with the continued at-reactor storage of spent fuel for the operating lifetime of the plant, including a 20-year period of license renewal? (yes/no)

RESPONSE for A.6 (For all 6 Stations)

- Dry storage facility construction may be opted for Zion Station for spent fuel storage after the year 2006.
- For remaining stations through the year 2011 -- NO
- Beyond the year 2011 (for all stations) -- PROBABLY

QUESTION A.7. If you answered yes to question 6, briefly describe this construction activity (e.g. expansion of fuel storage pool, building above ground dry storage facilities).

RESPONSE for A.7 (For all 6 Stations)

Any construction activity would be related to facilities built in connection with above ground dry storage.

Henry E. Bliss

Henry E. Bliss

cc: Spent Fuel Task Force Members
P. J. Garnier-Davis
P. G. Kuhel/S. G. Miller
L. B. Wilson

4518d:4

Dresden Station
R.R. #1,
Morris, Illinois 60450

NRC Docket #	Initial Operating License	Current License Expiration	Proposed Licens Expiration
50-237	12/22/69	No FTOL	12/22/2009
50-249	01/12/71	1/12/2011	01/12/2011

B.Low-level radioactive waste management questions:

1. Under the current scheme for LLRW Disposal (i.e. LLRW Policy Amendments Act of 1985 and regional compacts) is there currently or will sufficient capacity for wastes generated during the license renewal period be available to your plant(s)? If so, what is the basis for this conclusion?

Yes. The Illinois Department of Nuclear Safety (IDNS) low-level waste facility is designed for 50 year disposal period with an anticipated annual volume of 200,000 cubic feet per year. In the last three years the Central Midwest Compact (CMC) has disposed under 200,000 cubic feet each year.

2. If for any reason your plant(s) is/are denied access to a licensed disposal site for a short period of time, what plans do you have for continued LLRW disposal?

If the station is denied access to a disposal site, Dresden Station has on site an Interim Radwaste Storage Facility (IRSF). The design of facility will only accommodate 2 years of waste storage. Currently, this facility is designed for interim storage solidified waste only. At the present time, the station does not have storage capacity for DAW. A generic DAW storage building has been designed for the each of the 6 CECo facilities. This building could hold up to approximately 2 - 5 years generation of DAW. Depending on the length of time the station is shut out of a disposal site, actions would be taken to initiate the construction of the DAW storage building. The station will also to pursue further volume reduction techniques such as incineration, smelting, sort segregation etc. that are not currently in use.

3. In a couple of pages please describe the specific methods of LLRW management currently utilized by your plant. What percentage of your current LLRW (by volume) is managed by:

I. Dry Active Waste (DAW) (Packaged in Final Form)

A. Waste compaction?

Description	% of total Volume
Hot DAW and sand blast grit	13.1
Precompacted drums sent to waste processor for supercompaction.	25.8
Waste shipped to Waste Processor as bulk DAW in Sea Land containers. The Waste Processor sorts, segregates, packages and supercompacts the waste.	11.6

B. Waste segregation (through special controls or segregation at radiation check point)?

The station has in place a dual trash can system where by potentially contaminated material is put in a specially designated trash can and contaminated waste is put in an alternate color trash can. Each bag is surveyed. If the bag is less than an administrative limit, the bag is segregated for release.

C. Decontamination of wastes?

Description	% of total Volume
Metallics - Approximately 100 % of the metallics are decontaminated onsite or by a waste processor. Those items that can not be decontaminated by the waste processor are further reduced via supercompaction.	6.4

D. Sorting of waste prior to shipment?

To the extent practical the station or in the case of bulk DAW, the waste processor sorts the majority of the DAW. Roughly 87 - 90% of the total volume of DAW buried is sorted for items which can be decontaminated and reused or released as clean material.

E. Other (please specify)

Description	% of total Volume
Incineration	0.0
Absorbed Oily Waste	0.0
Demin Elements	0.0
Filter Cartridges (in HICs)	0.5
Activated Hardware	1.9

II. Wet Waste (Packaged in Final Form)

Description	% of total Volume
A. Resins: Solidification	1.7
Dewatering	21.0
B. Concentrator Waste (solidified)	2.7
C. Sludge	0.3
D. Waste Water Treatment Facility Waste	0.0
E. Decon Waste	0.0
F. Solidified Oil *	15.0

(* Note: In future years solidified oil will constitute less than 1-2 %. This large volume was due to a backlog of ma[illegible]

4. In a couple of pages, please describe the anticipated plans for LLRW management to be utilized by your plant(s) during the remainder of the operating license and through the license renewal term. What percentage of your anticipated waste (by volume) will be managed by:

I. Dry Active Waste (Packaged in Final Form)

A. Waste compaction?

Description	% of total Volume
Hot DAW, miscellaneous waste precompacted onsite, sand blast grit and other flowable materials	8.0
Precompacted drums sent to waste processor for supercompaction.	0.0
Waste shipped to Waste Processor as bulk DAW in Sea Land containers. The Waste Processor sorts, segregates, packages and supercompacts the waste.	See Incineration

B. Waste segregation (through special controls or segregation at radiation check point)?

No change anticipated from response 3.I.B

C. Decontamination of wastes?

Metallics - No change anticipated from question 3.I.C.

D. Sorting or waste prior to shipment?

No change anticipated from question 3.I.D.

E. Other (please specify)

Description	% of total Volume
Incineration	30.0
Absorbed Oily Waste	0.0
Demin Elements	0.0
Filter Cartridges (in HICs)	0.5
Activated Hardware	2.0
Decon Waste	6.0

II. Wet Waste (Packaged in Final Form)

Description	% of total Volume
A. Resins:	
Solidification *	49.0
Dewatering	0.0
B. Concentrator Waste (solidified)	3.0
C. Sludge	0.3
D. Waste Water Treatment Facility Waste	0.0
E. Decon Waste (primary system decon)	1.0
F. Solidified Oil	.5

(* Note: 100% of the resin will be solidified as mandated in the IDNS draft waste form rules.)

5. Do you anticipate the need to acquire additional land for the storage of LLRW for the operating lifetime of the plant, including a 20 year period of license renewal? If so, how much land? When would this acquisition occur? Where? (if answer is "yes", 3-4 sentences) No.

6. To provide information on the timing of future low-level waste streams, if you answered yes to question #9, over what periods of time are these activities contemplated?

Refer to question 9.

7. Do you anticipate any additional construction activity, on-site, or immediately adjacent to the power plant site, associated with temporary LLRW storage for the operating lifetime of the plant, including a 20-year period of license renewal? (yes/no) Yes

8. If you answered yes to question 7, briefly describe this construction activity (e.g. storage areas for steam generator components or other materials exposed to reactor environment)

Depending on the length of time the station is shut out of disposal facility, one DAW storage building may be built.

9. To provide information on future low-level waste streams which may effect workforce levels, exposure, and waste compact planning, do you anticipate any major plant modifications or refurbishment that are likely to generate unusual volumes of low-level radioactive waste prior to, or during, the relicensing period for the plant? If so, please describe these activities. Also, what types of modifications do you anticipate to be necessary to achieve license renewal operation through a 20-year license renewal term?

The station plans to dispose of 5 heating boilers and associated piping in 1991. The current plans are to cut up the piping and send the material to a waste processor for decontmination.

At the present time the station is in the midst of a major upgrade of the radwaste systems. The project will require the removal of the old GE solidification system including the centrifuge and associated piping. The station anticipates approximately 2500 - 3000 linear feet of pipe will be replaced.

The station is currently assessing the need to remove and dispose of Roofing material. It is estimated that this job will generate approximately 2400 cubic feet of uncompacted material.

Post strainer and under drain modification has been identified as a potential modification to be performed with in the next 10 years.

UTILITY Commonwealth Edison

SITE Braidwood, Byron, Dresden, LaSalle, Quad Cities, Zion

ENCLOSURES Additional information to socioeconomic questions 3 + 4

Exhibit A
August, 1990

Station/Taxing Districts	1980 Taxes (Paid in 1981)
Braidwood	
Forest Preserve	$ 72,038
Will County Building Commission	- -
Reed Township	22,588
Reed Township Road & Bridge	24,725
Reed Township General Assistance	- -
Braidwood Fire District	205,797
School District 255-U (Grade School)	3,082,869
Community College District 525	190,367
Godley Park District	- -
County (Will) Funds	407,040
Fossil Ridge Public Library	113,495
Reed Twp. versus. Mosquito Abatement	- -
Lawsuit versus County	- -
	$ 4,118,919
Byron	
County (Ogle)	$ 831,512
General (Ogle Country)	- -
Ogle County Road & Bridge	439,488
District School 226 (Now: Byron Unit 2)	3,804,249
District School 220 (Now: Oregon)	149,751
Junior College 511 (Now: J.C. 51)	287,391
Junior College 523	9,114
Byron Fire District	924,683
Oregon Park District	184,937
Byron Library	27,775
Byron Forest Preserve	- -
Rockvale Township	458,122
	$ 7,117,022
Dresden	
Grundy County	$ 296,379
Gooselake Township	3,452
General Assistance (Grundy County)	411
Grundy County Road & Bridge	20,465
Road & Bridge (Gooselake Township)	- -
Unit School 1 (Grade Schoo	1,719,508
Joliet Junior College 525	167,258
Coal City Fire District 5	73,232
Coal City Library	- -
	$ 2,280,705

1919Y

Station/Taxing Districts	1980 Taxes (Paid in 1981)
LaSalle	
T.B. Sanitarium	$ 17,705
County Highway (LaSalle)	264,253
County Bridge (LaSalle)	132,126
Mental Health (LaSalle County)	198,718
Other County Funds	470,109
Brookfield Township	717,449
Seneca High School 160	1,661,098
Seneca Grade School 170	1,680,653
Junior College 513 (Now: I.V. Comm. Coll.)	618,353
Seneca Fire District	82,844
Marseilles Fire District	41,488
Brookfield/Allen Assessor	--
Seneca Library District	--
	$ 5,884,796
Quad Cities (75% - C.E.Co.'s portion)	
County (Rock Island) Taxes	$ 63,767
Cordova Township	6,487
Road & Bridge (Cordova Township)	15,735
School District Unit 1 (Grade School)	304,621
Cordova Fire District	9,9[illegible]
Cordova Library	2,208
Blackhawk College 503	25,121
	$ 427,877
Zion	
County (Lake)	$ 457,230
County Road & Bridge Fund (Lake)	152,964
T.B. Sanitorium	121,374
Forest Preserve	259,374
Zion Park District	716,603
City of Zion	1,328,459
College of Lake County 532	347,454
High School No. 126	3,340,268
Township (Zion)	299,277
North Shore Sanitary District	1,050,796
Zion-Benton Public Library	259,374
School District No. 6 (Grade School)	3,606,293
	$11,939,466

1919Y

RESPONCE TO NUMARC QUESTIONNAIRE ON SOCIOECONOMIC QUESTION FOR ALL UTILITIES TO SUPPORT PART 51 RULE CHANGE.

Question # 3 parts A and C.

Both the BWR and PWR sites indicate that about 700 to 800 additional workers are involved in normal planned outages. This number includes contract labor and Commonwealth Edison personnel not normally assigned to the site. A maximum number of personal used at any one site appears to be about 1200 people used during the six month pipe replacement outage during the fall 1985 to spring of 1986.

18 planned outages are presented by station in the attached six tables.

Question # 3 part B

All sites report that about 125 additional workers not normally assigned to the site are used each outage to perform ISI and Erosion Corrosion Program Inspections. This number includes; insulation removal and replacement, scaffolding, surface preparation and the inspection. The inspections take place through out the outage.

BRAIDWOOD

	A2P01	A1R01	A2R01
Outage Dates	2/11/89 to 3/26/89	9/2/89 to 12/15/89	3/16/90 to 5/28/90
Days of Outage	43	104	73
Schedule Variance	+3	+35	+4
Incremental expense costs (include O.T.)	$2,720,000	$21,000,000	$16,300,000
Number of Surveil & PM's	369	562	697
Outage Work Requests completed (Number added) (expressed in %)	639 (248) 63%	1872 (591) (46%)	1830 (333) (22%)
Station Work Requests Completed during outage	1161	2540	2175
Outage exposure in REM	34.5	235.5	138.5
Number of Mods completed (# >5000 Man hrs)	27 (0)	5 (4)	39 (0)
No. Snubbers tested (# failed)	None	182 (21)	72 (2)
Number of Mod Approval Letters after 6 Mo. Cutoff			21
% of dual unit outage time	4.5%	0%	0%
Major Planned Work other than routine refuel	No refuel activities performed, Planned surveillence outage	"A" DG 18 mo Inspection "B" DG 5 yr Inspection 3 LP Turb Inspections SG Moist Carry-over Mod SG U-bend Stress Relieve Replace all RCP seals Snubber Reduction	Replace 3 LP Rotors Rebuild MSIV's Replace RCP Seal ATWS Mod D/G Inspection
Major Work Added	None	Replace SG Snubber Repaired Loop Stop Valves Replaced 2 LP Trub. Inspected/Replaced Turb Stationary Blades Repaired CST Floor	PM Valve Repacks
Schedule Variances	+3 Dual Unit outage and charging valve repair	+20 Loop Stop Valve Prop +2 Water Clarity Prob +1 CV Surv Test Delay +3 Rx Flange Cleaning +4 Cont Iso Valve Failed +2 Repl RHR Suction Valve +2 B Diesel Gen Problems +1 Rod Drop Comp Problem	+3 A RCP Seal Replacement +1 TV/GV Testing

BYRON

	B1R02	B2R01	B1R03
Outage Dates	9/3/88 to 11/9/88	1/7/89 to 3/6/89	1/5/90 to 3/4/90
Days of Outage	67	58	58
Schedule Variance	+3	-4	-1
Incremental expense costs (include O.T.)	$15,861,400	$11,237,000	$19,821,100
Number of Surveil & PM's	466	574	1653
Outage Work Requests completed (Number added) (expressed in %)	2180 (1078) 127%	1914 (538) 39%	1771 (568) 47%
Station Work Requests Completed during outage	2581	2361	2155
Outage exposure in REM	325	130	256
Number of Mods completed (#>5000 Man hrs)	36 (1)	68 (3)	54 (1)
No. Snubbers tested (# failed)	755 (41)	31 (0)	45 (1)
Number of Mod Approval Letters after 6 Mo. Cutoff			12
% of dual unit outage time	0%	0%	5%
Major Planned Work other than routine refuel	Replaced "A" LP Turb Rotor Removed 482 Snubbers ILRT SG Tubes Stress Relived Plugged 14 SG Tubes Main Gen Crawl Through Insp	Replace 2 LP Rotors UT 100% of the Fuel Replace 4 Turb Gov Valve Replace 4 Turb Throt Valve	Replace 2 LP Rotors Install Gen Fiber Optics Shotpeen SG Plugged 16 SG Tubes "A" DG 5 yr Inspection Main Gen Crawl Through Insp
Major Work Added	Tested 700 Additional Snubbers	Reconst 5 Fuel Bund	Struct Repair NDCT Gen Windings Repair
Schedule Variances	-2.5 Better Than Anticipated +4 Seal Table Leaks +2.5 SI Check Valve Prob +2 Accum Fill Line Leak -3 Only 1 Balance Run Req	-3 Better than Ant Perf -1 Turb Bal Rolls Not Req	-3 SG Activities; Fill & Vent +2 Repeat Pzr Safety Valve Test; Spurious Rx Trip; Gen Conductivity

DRESDEN

	D3R10	D2R11	D3R11
Outage Dates	3/27/88 to 6/26/88	10/30/88 to 2/21/89	12/3/89 to 2/11/90
Days of Outage	91	114	70
Schedule Variance	0	+15	+1
Incremental expense costs (include O.T.)	$7,765,000	$22,519,000	$9,000,000
Number of Surveil & PM's		2053	881
Outage Work Requests completed	1161	1835 (585)	1369 (432)
(Number added)		46%	46%
(expressed in %)	2064		
Station Work Requests Completed during outage	472	2841	1778
Outage exposure in REM		1164	321.9
	43 (1)		
Number of Mods completed		46 (1)	42 (0)
(# >5000 Man hrs)	19 (5)		
No. Snubbers tested (# failed)		23 (0)	16 (0)
Number of Mod Approval Letters after 6 Mo. Cutoff			4
	15%		
% of dual unit outage time		11%	39%
Major Planned Work other than routine refuel	Check Plate Repair		
	SBLC Mod	Replaced 54 CRD's	HP Turb Overhaul
	DW Thickness Measur	MSIP 127 Welds	Main Gen Overhaul
	Changed 61 CRD's	DCRDR Mod	DCRDR Mods
	Replaced 250 V Battery	Recoated Torus	ILRT
		Vacuumed CRD Guide Tubes	Control Room Ann Mod
		Chem Decon	Replaced 32 CRD's
		Replaced 2 Batteries	Cleaned Main Cond
		MOV Testing	BOP MOV Overhaul
		SRM/IRM Dry Tube Repl	
	Replaced JP Beam Bolt		
Major Work Added	Replaced 125 V Battery	24 Weld Overlays	Pipe Support Work
		Repair DW Heat Damage	Turb Extract Repairs
		Recoat DW Head	
		Increased ISI	
		Rework 1 CRD	
Schedule Variances		+9 Weld Overlays	+1 Drain Rx Cav & Decon
		+2 CRD Rework	
		+4 Surveillance Prob	

LASALLE

	L1R02	L2R02	L1R03	L2R03
Outage Dates	3/13/88 to 7/8/88	10/15/88 to 2/10/89	9/15/89 to 1/10/90	
Days of Outage	117	118	117	
Schedule Variance	+12	+13	+27	
Incremental expense costs (include O.T.)	$17,427,000	$15,973,000	$15,118,200	
Number of Surveil & PM's		1240	838	
Outage Work Requests completed (Number added) (expressed in %)	1998	2374 (908) 62%	2168 (645) (42%)	
Station Work Requests Completed during outage	2591	3463	3433	
Outage exposure in REM	925	1182	788	
Number of Mods completed (#'s 5000 Man hrs)	79 (12)	69 (10)	52 (10)	
No. Snubbers tested (# failed)	238 (8)	249 (18)	36 (2)	
Number of Mod Approval Letters after 6 Mo. Cutoff				
% of dual unit outage time	5%	0%	26%	
Major Planned Work other than routine refuel	MSIP 27 Welds Inspect 1 LP Rotor Eliminated 958 Snubbers Inspect Gen Rotor DW Cooling Mod	DW Cooling Mod Rx Water Level Mod Eliminated 747 Snubbers Removed FM CRD	DCRDR Mods DW Cooling Mod SOR Switch Mod Appendix R Mods Recirc Disch Valve Repair Chemical Decon ILRT HFA Relay Inspection 1 LP & HP Turb Inspection	
Major Work Added	Repair RR Pump Repair Recirc Disch Valve T/G Realign	DW Press Test Mods Caused by MSIP Work Recir Disch Valve Repair Rework 5 CRD's	Generator Rotor Swap T/G Re-alignment	
Schedule Variances		+2 DW Press Test +3 Struct Steel Mods +2 Rework CRD's +1 TIP Purge Problems +1 TIP Indexer Prob +2 FW Control Prob +2 Start-up Problems	+2 DW Noble Gas Problem +5 Contractor Shutdown QC +3 Mod Scheduling Prob +4 Dual Unit Outage +1 Refuel Bridge Problems +3 Rx Vessel Assy & Decon +4 T/G Re-alignment +1 DW Air Leaks +3 Gen Disc Oil Prob +1 Alt Bus Bar Problem	

QUAD CITIES

	Q2R09	Q1R10	Q2R10	Q1R11
Outage Dates	4/10/88 to 6/25/88	9/10/89 to 11/28/89	2/4/90 to 5/8/90	
Days of Outage	76	80	93	
Schedule Variance	+6	+10	+10	
Incremental expense costs (include O.T.)	$10,821,000	$13,750,000	$20,281,200	
Number of Surveil & PM's		964	947	
Outage Work Requests completed	1356 (379)	1290 (300)	1755 (834)	
(Number added)	39%	33%	(92%)	
(expressed in %)				
Station Work Requests Completed during outage	1759	1569	2188	
Outage exposure in REM	521	671	601	
Number of Mods completed (# >5000 Man hrs)	36	41 (0)	32	
No. Snubbers tested (# failed)	20 (0)	85 (5)	20 (0)	
Number of Mod Approval Letters after 6 Mo. Cutoff			5	
% of dual unit outage time	10%	0%	0%	
Major Planned Work other than routine refuel	2 LP Rotor Inspections Turb Valve Inspections MSIP 47 Welds	Main Gen Overhaul 18 Weld Overlays Torus Paint Touchup Remov Head Spray Line Replace RWCU Line Removed CRD Return Line	DG Mod & Inspection Replace Recirc End Cap Replace 2 LP Rotors Installed Recir Pump Clamp Remove CRD Return Line Remove Head Spray Line	
Major Work Added	16 Weld Overlays Replaced"C" LP Rotor Expanded ISI Flued Head Mod	885 Work Req Added After 30 Day Cutoff	LPRM Flange Repair Rx Flange Repair Rx Head Crack Investigation Repair Ext Steam Iso Valve Repair Turb Casings	
Schedule Variances		+3 Drywell Asbestos Removal +2 Recirc Sys Decon Delay +2 QC Stop Work Order +6 Replace Recirc Pump Seal -3 Made Up Time	+1 Rx Head Crack +6 RBCCW LLRT Failures +2 LPRM Flange Repairs +1 Rx Flange Repair	

ZION

	Z1R10	Z2R10	Z1R11	Z2R11
Outage Dates	2/25/88 to 5/9/88	10/13/88 to 12/28/88	9/7/89 to 1/25/90	
Days of Outage	75	76	140	
Schedule Variance	+5	+6	+71	
Incremental expe (include O.T.)	$20,917,000	$17,749,000	$18,800,000	
Number of Surveil & PM's		1178	1305	
Outage Work Requests completed				
(Number added)	2400	2157 (700)	2920 (1173)	
(expressed in %)		48%	67%	
Station Work Requests				
Completed during outage	3125	3065	390	
Outage exposure in REM	737	467	480	
Number of Mods completed				
(#>5000 Man hrs)	37 (15)	31 (7)	30 (3)	
No. Snubbers tested (# failed)	324 (12)	218 (4)	24 (1)	
Number of Mod Approval Letters after 6 Mo. Cutoff				
% of dual unit outage time	0%	13%	4%	
Major Planned Work other than routine refuel	Replace Main Gen Rotor	ILRT Replace RCFC Motor Replaced FW Pump Turb Replaced 10 Incore Thimbles Repaired RHR Pump Seal Repaired 4 SI Check Valves Replaced RCP Motor	S/G Tube Plug Replacement 0 DG Overhaul RHR Pump Seal Drain Mod Aux FW MOV Mod DCRDR Mods	
Major Work Added	Rx Head Repair SI Check Valve Repair SG Snubber Repair	Blackout Mod Repaired Rx Head Additional Work in "A" SG	S/G Girth Weld Repair Replace DG Generator SG Sleeving/Plugging Replace RCP Rotor Close LSIV's Replace D/G's Bearings	
Schedule Variances		+1 SG Chem Excursion +1 RCP Motor High Current +1 Check Valve Test Prob +1 Holidays +2 Thrust Bearing Trip Prob	+4 RCS Drain Down +4 148 Bus Outage +2 RCS Fill & Vent +5 AFW MOV Mod Delay +18 D/G Repair Delays +3 Delay with PT-10 +1 Unit 2 Forced Outage +9 Connoseal Leaks +9 AFW MOV Problem +5 Repack RH Valve +3 RPI Cal's and Testing +5 Repair AFW Pump +3 Repair EHC Controls	

In answer to your June 28, 1990, request, attached is a summary listing the monies paid to the various taxing districts as related to our nuclear stations. The two years listed include 1985 taxes (paid in 1986) and our latest year, 1989 taxes (payable in 1990).

As we discussed, the monies are attributed to the large tax parcels we identify as the "station" and we estimate this represents the majority of money we pay to the individual taxing districts. For instance, a station (including the cooling lake) may consist of numerous small tax parcels but the majority of monies (90%+) are generated by the parcels on which the station buildings are located. Additionally, we have paid actually one-half of total amount listed for 1989 taxes. The remaining one-half will be paid by September 1, 1990.

Station/Taxing Districts	1985 Taxes (Paid in 1986)	1989 Taxes (Payable in 1990)
Braidwood		
Forest Preserve	$ 580,297.28	$1,658,149.78
Will County Building Commission	990,086.05	832,176.72
Reed Township	33,533.34	63,809.08
Reed Township Road & Bridge	68,203.40	108,120.94
Reed Township General Assistance	20,461.02	15,952.27
Braidwood Fire District	231,891.57	743,553.00
School District 255-U (Grade School)	7,143,169.64	9,304,604.24
Community College District 525	1,381,118.89	2,151,783.89
Godley Park District	157,975.57	1,025,376.43
County (Will) Funds	2,896,371.18	5,820,805.05
Fossil Ridge Public Library	98,894.94	564,533.09
Reed Twp. v. Mosquito Abatement	--	221,559.30
Lawsuit versus County	--	225,104.27
	$13,602,002.88	$22,735,528.86
Byron		
County (Ogle)	$ 2,182,730.39	2,771,890.64
General (Ogle County)	86,137.40	--
Ogle County Road & Bridge	605,148.01	--
District School 226(Now: Byron Unit 2)	5,888,994.34	12,611,082.78
District School 220 (Now: Oregon)	390,131.05	506,628.61
Junior College 511 (Now: J.C. 51)	1,168,593.32	1,861,216.08
Junior College 523	27,170.34	47,310.61
Byron Fire District	622,637.83	920,924.57
Oregon Park District	920,402.14	1,271,682.78
Byron Library	93,133.33	172,622.17
Byron Forest Preserve District	259,723.93	861,636.88
Rockvale Township	--	396,124.76
	$12,244,802.08	21,421,119.88
Dresden		
Grundy County	$ 516,279.22	$ 872,348.14
Gooselake Township	5,375.30	17,901.74
General Assistance (Grundy County)	625.04	--
Grundy County Road & Bridge	25,001.41	77,115.20
Road & Bridge (Gooselake Township)	4,500.26	172,132.14
Unit School 1 (Grade School)	3,086,674.70	4,471,648.73
Joliet Junior College 525	303,017.15	417,076.18
Coal City Fire District 5	60,001.40	69,713.52
Coal City Library	--	238,403.01
	$ 4,001,476.48	$ 6,136,338.66

LaSalle		
T.B. Sanitarium	$ 45,550.36	$ 157,985.90
County Highway (LaSalle)	396,104.28	347,987.84
County Bridge (LaSalle)	96,251.68	173,992.82
Mental Health (LaSalle County)	337,480.74	334,415.80
Other County Funds	1,587,994.03	1,183,162.62
Brookfield Township	871,828.54	758,266.12
Seneca High School 160	2,361,185.82	3,244,293.24
Seneca Grade School 170	2,432,088.72	2,838,887.08
Junior College 513 (Now: I.V. Comm. Coll.)	699,522.58	731,819.02
Seneca Fire District	115,068.69	117,272.00
Marseilles Fire District	90,708.20	153,462.76
Brookfield/Allen Assessor	8,714.32	8,699.70
Seneca Library District	-	307,621.50
	$ 9,042,497.96	$10,357,866.40
Quad Cities (75%-C.E.Co.'s portion)		
County (Rock Island) Taxes	$ 105,531.00	124,430.27
Cordova Township	22,132.80	22,693.30
Road & Bridge (Cordova Township)	20,149.20	15,001.25
School District Unit 1 (Grade School)	527,202.60	550,382.06
Cordova Fire District	20,462.40	54,575.29
Cordova Library	6,925.20	24,224.75
Blackhawk College 503	45,031.20	73,370.36
	$ 747,434.40	$864,677.28
Zion		
County (Lake)	$ 888,708.27	$989,927.34
County Road & Bridge Fund (Lake)	172,108.99	--
T.B. Sanitorium	7,823.14	--
Forest Preserve	240.952.58	254,603.62
Zion Park District	990,498.96	1,322,870.52
City of Zion	1,739,865.34	2,175,703.60
College of Lake County 532	342,653.34	445,111.21
High School No. 126	3,554,832.65	4,095,023.09
Township (Zion)	251,904.97	425,526.32
North Shore Sanitary District	519,456.20	439,769.88
Zion-Benton Public Library	256,598.85	345,406.30
School District No. 6 (Grade School)	3,659,662.79	5,457,063.44
	$12,624,976.08	$15,951,005.32