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Report to the Chairman, Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, House of Representatives

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ELECTRICITY REGULATION

FERC's Efforts to Monitor and Enforce Hydroelectric Requirements

GAO/RCED-94-162

GAO

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Resources, Community, and
Economic Development Division

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May 24, 1994

The Honorable John D. Dingell
Chairman, Subcommittee on Oversight
and Investigations
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

In response to your request, this report provides information on the Federal Energy Regulatory Commission's (FERC) activities to ensure that approximately 1,670 nonfederal hydroelectric projects are in compliance with its safety and environmental requirements. Specifically, we reviewed FERC's efforts to (1) monitor project compliance with its operating requirements, (2) investigate noncompliance allegations, and (3) enforce requirements, including the use of penalties.

Results in Brief

FERC's monitoring procedures and practices are adequate to ensure that nonfederal hydroelectric projects are operating in compliance with its requirements. On average, FERC inspects projects about once every 1-1/2 years, and annual inspections are performed on high-hazard projects—those that pose a significant health, safety, or environmental threat in case of failure. While the work force has been able to adequately monitor compliance with existing requirements, FERC officials said that the current work force may be insufficient to ensure compliance with the increasing environmental requirements placed on projects during licensing.

FERC's procedures for investigating allegations of noncompliance with license requirements are adequate and generally followed. FERC investigated all 1,268 allegations received in fiscal years 1989 to 1993. FERC reduced the average investigation time—from receipt of the allegation to completion of the investigation—from 347 days in 1989 to 89 days in 1993.[1]

FERC's monitoring and enforcement efforts to ensure structural soundness, public safety, and environmental protection are showing positive results. The number of violations committed per year decreased from 157 in fiscal

[1]Data on the investigation time for fiscal year 1993 do not include five investigations that were ongoing when we completed our work.

year 1989 to 87 in 1993, a decline of 45 percent. Several industry officials attribute this reduction, in part, to the increased scope and proficiency of FERC's inspection and compliance work. Over the same time period, FERC increased its enforcement efforts against project operators who commit violations—compliance orders, which are directives to correct a deficiency, increased from 26 to 37; fines totaling $3.7 million were levied against 31 projects; and eight licenses were revoked.

Background

Under the Federal Power Act, as amended, FERC is responsible for licensing and regulating about 1,670 nonfederal hydroelectric projects. FERC's primary concern is to ensure that project operators comply with terms and conditions designed to protect humans, property, and the environment. Project operators also are required to submit plans for changes to the project and proof of meeting a variety of administrative requirements. While specific terms and conditions may vary among project operators, they often include requirements to (1) maintain the project's physical structure in a safe manner, (2) maintain a minimum stream flow below the dam to support the aquatic environment, and (3) take measures to ensure public safety. In the 1980s, FERC increased the number of environmental requirements projects must meet. These additional requirements are included when FERC licenses or relicenses a project.

FERC ensures compliance with license requirements through an on-site inspection program and, when warranted, an investigation and enforcement program. The on-site inspection program consists of periodic operational inspections, environmental and public use inspections of projects, construction inspections, special inspections, and a small number of unscheduled inspections. During the inspections, the inspector systematically checks for evidence of damage or other conditions that could impair proper project operation or violate standard or project-specific requirements. In addition, for those high-hazard projects where the dam structure poses a significant threat in case of failure, FERC conducts an annual inspection and requires a comprehensive engineering safety inspection by an independent consultant every 5 years. FERC also uses information from its Hydropower Licensing Compliance Tracking System to track due dates for key project requirements, such as emergency action plans should the dam fail, the installation of warning lights and other public safety features, and timetables for soil erosion control work and dam repairs.

FERC investigates allegations of noncompliance to determine if there is a violation of project requirements and, when warranted, invokes a variety of remedies. These include compliance orders, which are directives to correct the condition that caused the violation; license revocations; and civil penalties, including fines. The Electric Consumers Protection Act of 1986 expanded FERC's enforcement authority by authorizing it to assess civil penalties of up to $10,000 per day. Allegations can be identified by FERC inspectors; federal and state safety, environmental, and fish and wildlife agencies; environmental and recreation organizations; and private citizens. In addition, some violations are self-reported by hydroelectric project operators.

FERC's Office of Hydropower Licensing carries out inspection and compliance responsibilities in the hydroelectric area. The office's Division of Dam Safety and Inspections and its five regional offices have primary responsibility for the structural safety and inspections of dams, while its Division of Project Compliance and Administration has primary responsibility for investigating allegations of noncompliance, including noncompliance with environmental requirements.

FERC's Inspection and Monitoring Programs Are Adequate

FERC's primary methods of monitoring compliance with license conditions and its other requirements are (1) conducting a large number of scheduled and a small number of unscheduled on-site inspections, (2) overseeing 5-year major inspections of dam structures and systems, and (3) maintaining the Hydropower Licensing Compliance Tracking System for recording compliance actions and tracking key project licensing requirements.

FERC Conducts Many Inspections to Ensure Compliance With Its Requirements

FERC inspects nonfederal hydroelectric projects, on average, about once every 1-1/2 years. About 900 projects are considered high-hazard and are inspected annually. Typically, the inspector, accompanied by a representative of the project operator, examines the dam and its related structures. The inspector reviews the project's operation and maintenance program; emergency action plans; and compliance records of other requirements, such as for maintaining a specified minimum flow of water downstream from the project. Finally, the inspector discusses items that need correction with the project operator and prepares an inspection report that includes a summary of the findings, photographs of selected project features, and possible violations.

Of the approximately 40 unscheduled inspections FERC performs annually, about one-third are random and two-thirds involve projects with a history of noncompliance. The Deputy Director, Division of Dam Safety and Inspections, and industry experts said that the random inspections are an effective deterrent because they show project operators that an inspection can be made at any time.

FERC also performs environmental and public use inspections that cover standard and special environmental, recreational, and public safety requirements. While the required frequency of such inspections varies from 3 to 5 years, FERC tries to annually inspect projects with major environmental requirements, such as the operation of a fish ladder to assist migration. According to the Director, Division of Dam Safety and Inspections, resource constraints prevent annual inspections.

Table 1 provides a breakdown of the types of inspections FERC performed during fiscal years 1989 through 1993. The number of inspections increased by about 25 percent during the 5-year period.

Table 1: Type of Hydroelectric Inspections Performed by FERC, Fiscal Years 1989 Through 1993

Inspection type	1989	1990	1991	1992	1993	Percent increase 1989-93
Operational	1,161	1,204	1,217	1,252	1,347	16
Construction[a]	363	384	380	417	429	18
Special[b]	242	249	245	294	376	55
Environment and public safety	181	214	167	183	248	37
Emergency action plan testing[c]	•	•	•	36	40	11[d]
Total[e]	**1,947**	**2,051**	**2,009**	**2,182**	**2,440**	**25**

[a]Construction inspections are in-depth, on-site inspections conducted throughout project construction.

[b]Special inspections are on-site reviews of a specific aspect of a project, such as water flow monitoring devices. Unscheduled inspections are included in the special inspections category.

[c]During emergency action inspections, which began in fiscal 1992, FERC observes an enactment of a dam's operation activities in case of failure.

[d]The increase is for fiscal years 1992 through 1993.

[e]The independent consultant's 5-year inspections are not included.

A major component of FERC's monitoring and inspection program is the 5-year comprehensive engineering safety inspections performed on

high-hazard projects by independent consultants. The consultant inspects the project and evaluates and identifies any actual or potential deficiencies, such as deterioration of the dam structure. FERC reviews the consultant's report to evaluate the adequacy of the consultant's work and to determine what steps, if any, the project operator must take to ensure the project's safe operation. For example, FERC may order safety improvements, such as reinforcement of the dam wall.

While FERC has adequately managed its inspection responsibility, additional environmental requirements being placed on projects as they are licensed or relicensed will add to FERC's compliance inspection workload. For example, during 1993 and 1994, about 153 projects will be licensed or relicensed—a process that specifies the operational and environmental requirements that the project must meet—which cover 9 percent of FERC's licensed projects. Then, the inspectors will be required to verify compliance not only with operational requirements, but also with the expanded list of environmental requirements. Our 1992 report on hydroelectric project licensing discussed FERC's acceptance of more environmental recommendations after implementation of the Electric Consumers Protection Act of 1986.[2] Consequently, according to a FERC official, the existing staff will be stressed to ensure that these projects are in compliance with all FERC requirements. The official also said that fiscal year 1994 staffing is adequate, but that FERC's 1995 budget request did not include additional staff to help meet the expanded workload.

FERC's Monitoring and Inspection Programs Meet or Exceed Standards

FERC's monitoring and inspection procedures are generally as stringent, or more stringent, than those of other federal and state agencies that are responsible for dam safety and compliance. Officials at the U.S. Army Corps of Engineers, the Tennessee Valley Authority (a federal utility), the Federal Emergency Management Agency, and the state of California said that generally, FERC's procedures meet or exceed currently recognized engineering standards for dam safety. For example, while the Tennessee Valley Authority inspects each of its 54 projects every 2-1/2 years, FERC inspects dams, on average, about once every 1-1/2 years.

As part of its compliance program, FERC uses its automated management information system—the Hydropower Licensing Compliance Tracking System—for monitoring (1) requests for information from project operators, (2) the dates the information is received, and (3) the number of

[2]Electricity Regulation: Electric Consumers Protection Act's Effects on Licensing Hydroelectric Dams (GAO/RCED-92-246, Sept. 18, 1992).

days the information is overdue. Information (or filings) can include required structural safety reports, public safety and recreation action plans, and actions to improve the environment around the project. FERC notifies the project operator after the filing is 30 days late.

Our analysis shows that since FERC intensified its monitoring program and use of the tracking system in 1988, the accuracy and completeness of records of overdue actions have improved. According to FERC documents, this improvement is partly attributable to our 1988 report on FERC's enforcement of project requirements. We reported that the tracking system data were not always complete and that FERC had not established effective controls to ensure the accuracy of the data in the system.[3] Our current verification of the tracking system data shows that the information is now generally accurate and complete. For example, at least 87 percent of all overdue actions are included in the system, and at least 98 percent of those data are accurate. Appendix III discusses the methodology that we used to assess the reliability of the tracking system and provides details on our objectives and scope.

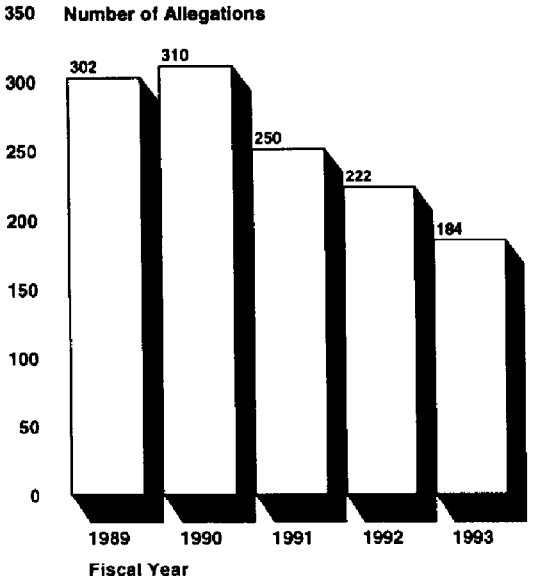
FERC Investigates Noncompliance Adequately

Our review of FERC documents and interviews with FERC officials indicate that investigative policies and procedures are clear, comprehensive, and generally followed. For example, key procedures require (1) regional offices to communicate, within 2 days, all allegations of noncompliance to FERC headquarters in Washington, D.C.; (2) investigation of all allegations; and (3) immediate assessment of the potential hazard where the possibility exists for serious safety or environmental consequences.

From fiscal years 1989 through 1993, FERC received 1,268 allegations. These allegations were reported by FERC regional offices, federal and state agencies, environmental groups, private citizens, and project operators. As figure 1 shows, the number of allegations reported has generally declined.

[3]Energy Regulation: Enforcement of Requirements Imposed on Hydropower Projects Needs Strengthening (GAO/RCED-88-60, Mar. 4, 1988).

Figure 1: Allegations Received by FERC, Fiscal Years 1989 Through 1993



Source: GAO analysis of FERC data.

Our analysis of FERC's investigation activities indicates that FERC is placing more emphasis on the timely review and disposition of an allegation. Records show that the average investigation time has declined since FERC created the Division of Project Compliance and Administration in 1988. Completion time, from FERC's receipt of the allegation to a determination of whether a violation occurred, or closeout of the investigation, was 347 days in fiscal year 1989, 243 in 1990, 224 in 1991, 176 in 1992, and 89 in 1993.[4] This represents a decrease of 74 percent from 1989 through 1993.

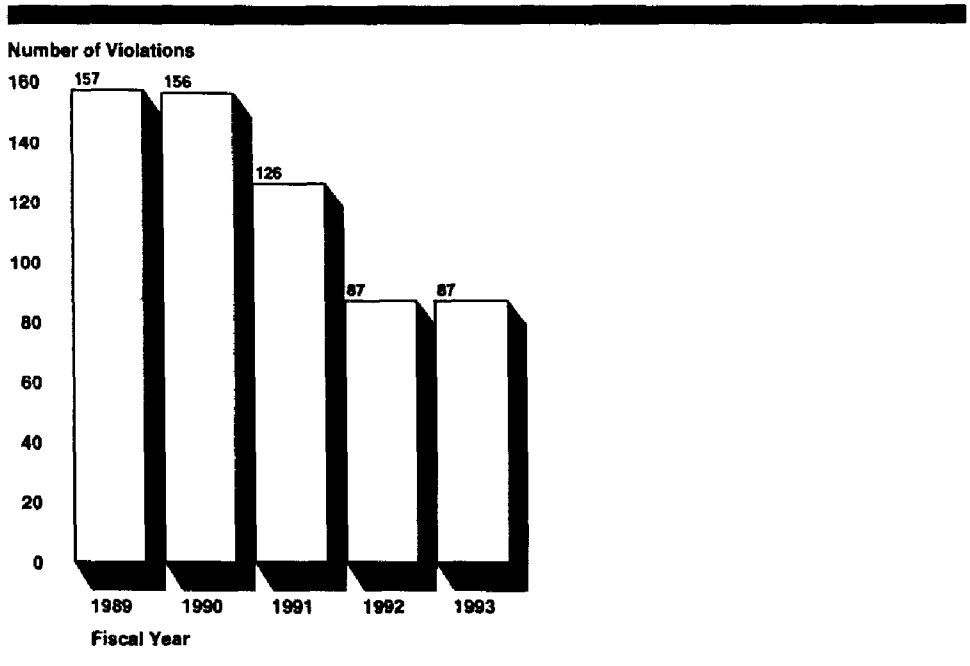
FERC Has Increased Its Enforcement Efforts and Use of Penalties

Project operators have been more responsive to correcting FERC-identified deficiencies since the passage of the Electric Consumers Protection Act in 1986 and the creation of the Division of Project Compliance and Administration. FERC officials and industry experts said that FERC's improved investigation activities and the increased number of compliance orders issued, dollar fines levied, and licenses revoked have helped

[4]For allegations made in fiscal year 1993, there remain, as of January 1994, five ongoing investigations, averaging 229 days. Adding these cases to the 1993 average would increase the average from 89 to 92 days.

improve compliance. Our analysis of information from FERC's automated management information system supports this contention. We found that the number of violations declined by 45 percent, from 157 to 87, for fiscal years 1989 through 1993. (See fig. 2.) During this time, the number of projects remained at about 1,700.

Figure 2: Number of Violations, Fiscal Years 1989 Through 1993



Source: GAO analysis of FERC data.

Furthermore, as table 2 shows, for fiscal years 1989 through 1993, dam safety and engineering issues made up about 49 percent of all violations; environmental concerns made up about 46 percent; and public safety, recreation, and administrative issues totaled about 5 percent.

Table 2: Type of Violations, Fiscal Years 1989 Through 1993

Violation type	1989	1990	1991	1992	1993	Total	Percent of violations
Dam safety and engineering	80	70	74	42	34	300	49
Environmental	68	77	43	43	48	279	46
Public safety and recreation	5	8	8	2	5	28	4
Administration	4	1	1	0	0	6	1
Total	**157**	**156**	**126**	**87**	**87**	**613**	**100**

FERC Increased the Number of Compliance Orders Issued

In cases in which violations have not been corrected, FERC can issue a compliance order to help achieve compliance. The orders direct project operators to take action to correct the violation. Generally, failure to obey a compliance order is cause for a penalty—either a fine or, in severe cases, license revocation. As table 3 shows, the number of compliance orders issued annually increased from 8 in fiscal year 1988 to 37 in 1993. Of the 133 compliance orders issued during that period, 72, or 54 percent, involved environmental violations, such as a failure to meet the minimum downstream water flow requirement.

Table 3: Number of Compliance Orders, by Issue, Fiscal Years 1988 Through 1993

Issue[a]	1988[b]	1989	1990	1991	1992	1993	Number of orders issued
Environmental	1	17	8	5	17	24	72
Public safety and recreation	2	5	4	3	3	9	26
Dam safety and engineering	5	4	5	2	2	1	19
Administration[c]	0	0	5	3	5	3	16
Total number of orders	8	26	22	13	27	37	133[d]

[a]Each compliance order is included once, even though five compliance orders concerned two issues.

[b]The first compliance order was issued in April.

[c]Administrative issues include the failure to submit schedules for meeting requirements.

[d]Does not include four compliance orders—two orders that each rescinded one previous compliance order—and the previous compliance orders.

FERC Issues Penalties for Serious Violations

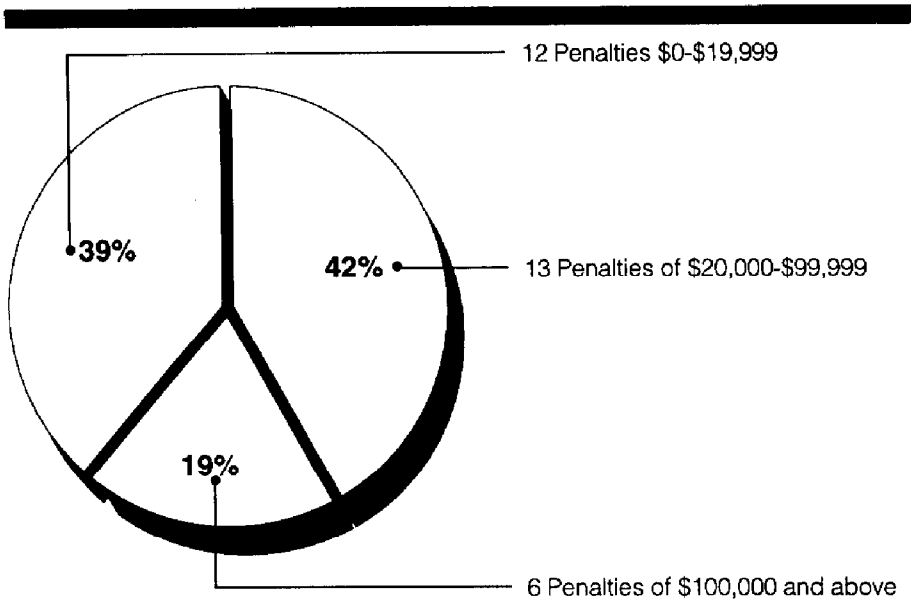
The Electric Consumers Protection Act authorized FERC to impose a penalty on project operators who commit violations. The legislation requires that, when deciding on the severity of the penalty, FERC consider

the nature and seriousness of the violations and the project operator's efforts to remedy the violations in a timely manner. In accordance with the legislation, FERC has implemented regulations that require consideration of whether (1) the project operator had actual or constructive knowledge of the violations; (2) the project operator had a history of previous violations; (3) the violations caused loss of life or injury to persons; (4) economic benefits were derived because of these violations; (5) the violations caused damage to property or the environment; (6) the violations endangered persons, property, or the environment; (7) there were timely, untimely, or no remedial efforts; and (8) any other pertinent considerations exist. If FERC decides to assess a penalty, it issues a notice of proposed penalty, at which time the project operator may accept the proposed penalty or appeal it.[5]

FERC issued 39 penalties since the passage of the Electric Consumers Protection Act in 1986. Of that number, 31 were fines totaling almost $3.7 million. In the other eight cases, FERC revoked the license or reached agreement with the project operator to surrender the license. As figure 3 shows, of the 31 penalties, 39 percent were under $20,000, 42 percent were between $20,000 and $99,999, and 19 percent were $100,000 or greater. Appendixes I and II list the penalties FERC assessed against project operators since passage of the act.

[5]In certain circumstances, administrative hearings are held before any penalties are assessed. In other circumstances, hearings are held in U.S. district courts after FERC assesses the penalties.

Figure 3: Dollar Penalties Assessed Under Authority of the Electric Consumers Protection Act, 1986 Through 1993



Note: The Electric Consumers Protection Act was enacted in October 1986.

Source: GAO analysis of FERC data.

A Small Percentage of Project Operators Commit a Large Percentage of Violations

A relatively small number of project operators commit a disproportionately large number of violations and use much of FERC's compliance resources, according to FERC officials and hydropower industry experts. Four percent, or 83, of all active projects from March 1988 through January 1994 account for 379, or 44 percent, of all violations. FERC is addressing this problem, including targeting inspections at these projects and sending teams from the Division of Project Compliance and Administration to the project to ensure compliance by reviewing project requirements with the licensees.

Agency Comments

We discussed the factual information contained in this report with the Director and Assistant Director, Office of Hydropower Licensing, and the Directors of the Division of Project Compliance and Administration and the Division of Dam Safety and Inspections. These officials generally agreed with the facts presented. They provided some technical clarifications, which have been incorporated where appropriate. However,

as requested, we did not obtain written agency comments on a draft of this report.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to congressional energy committees; the Chair, FERC; and other interested parties. We will also make copies available to others on request.

Should you have any questions or need additional information, please contact me at (202) 512-3841. Major contributors to this report are listed in appendix IV.

Sincerely yours,

Victor S. Rezendes
Director, Energy and Science Issues

Contents

Abbreviations

FERC	Federal Energy Regulatory Commission
GAO	General Accounting Office
HLCTS	Hydropower Licensing Compliance Tracking System

FERC Hydroelectric Penalties, 1986 Through 1993

Number	Allegation date	Final resolution date	Months from allegation to final resolution	Penalty amount/ result
1	10/10/86	10/19/87	12	$2,500
2	04/24/87	08/22/88	16	25,000
3	01/11/88	03/09/89	14	5,000
4	07/01/88	11/02/89	16	19,000
5	07/07/88	02/14/90	19	40,000
6	01/26/88	04/27/90	27	2,100
7	11/14/86	06/13/90	43	18,000
8	11/23/88	09/21/90	22	100,000
9	03/30/87	10/16/90	43	2,024,000
10	05/23/88	10/16/90	29	40,000
11	12/01/88	02/13/91	26	121,500
12	12/15/88	02/13/91	26	96,000
13	12/01/89	02/25/91	15	44,100
14	04/30/90	06/03/91	13	100,000
15	10/03/88	07/09/91	33	500,000
16	07/01/89	09/06/91	26	12,000
17	09/01/90	12/09/91	15	5,000
18	09/01/90	12/09/91	15	5,000
19	02/27/90	04/23/92	26	40,000
20	04/01/89	04/23/92	37	40,000
21	08/25/90	04/23/92	20	22,000
22	10/01/90	04/23/92	19	40,000
23	05/04/87	04/23/92	60	40,000
24	10/31/89	06/30/92	32	9,000
25	01/27/88	08/04/92	55	49,859
26	02/10/92	09/23/92	7	4,500
27	07/14/89	01/19/93	42	15,000
28	03/23/92	02/03/93	10	25,000
29	02/14/91	04/15/93	26	25,000
30	11/01/88	07/19/93	57	206,100
31	09/08/92	08/31/93	12	8,000
Total				**$3,653,700**

FERC Hydroelectric Penalties Resulting in License Revocation or Surrender

Number	Allegation date	Final resolution date	Months from allegation to final resolution	Penalty result
1	07/29/91	06/28/93	23	ORL[a]
2	07/29/91	06/28/93	23	ORL
3	07/29/91	06/28/93	23	ORL
4	07/29/91	06/28/93	23	ORL
5	07/10/87	08/19/93	73	S&C[b]
6	07/10/87	08/19/93	73	S&C
7	07/10/87	08/19/93	73	S&C
8	07/10/87	08/19/93	73	S&C

[a]Order Relinquishing License; FERC ordered the licensee to surrender its license.

[b]Stipulation and Consent Agreement; the licensee agreed to relinquish its license.

Objectives, Scope, and Methodology

The Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, requested that we identify the Federal Energy Regulatory Commission's efforts to (1) monitor project compliance with its operating requirements, (2) investigate noncompliance allegations, and (3) enforce requirements, including its use of penalties.

To determine if FERC's inspection and monitoring procedures were adequate, we reviewed relevant regulations, inspection manuals, and inspection reports and obtained statistics from FERC on the number and type of inspections. We interviewed Office of Hydropower Licensing officials at FERC headquarters in Washington, D.C., and the Directors of each of FERC's five regional offices. Although it was beyond the scope our review to assess the comprehensiveness, over time, of inspections, we accompanied FERC regional staff on operational, construction, and special inspections of four hydroelectric projects in Alabama, Georgia, and Virginia. We also interviewed state dam safety, fish and wildlife, and environmental officials in California, Georgia, Michigan, New York, Washington, and Wisconsin. In addition, we interviewed hydroelectric project operators, industry representatives, a hydroelectric consultant, and a lawyer specializing in hydropower issues. We also interviewed officials at the U.S. Army Corps of Engineers and the Tennessee Valley Authority concerning how FERC's inspection policies and procedures compare with their own.

To identify FERC's efforts to investigate noncompliance allegations, we reviewed relevant policies and procedures and interviewed regional office and headquarters officials who were responsible for investigating allegations. We also obtained data as of January 14, 1994, from FERC's Hydropower Licensing Computer Tracking System (HLCTS) on all allegations received since the beginning of fiscal year 1989. We selected fiscal year 1989 because it was the first full fiscal year after the Division of Project Compliance and Administration was created.

To attain our objectives, we relied extensively on HLCTS data. We assessed the reliability of these data, including relevant general and application controls, and found them to be adequate. We also conducted sufficient tests of the data to conclude that the data are sufficiently reliable to be used in our analyses. To determine the accuracy and completeness of key data used to track noncompliance allegations and project information requirements, we selected a simple random sample of 40 of 1,782 projects in HLCTS. Our sample was selected from all projects that were active as of

June 1, 1993, and also those projects that had a noncompliance allegation or an overdue action after September 30, 1988.

To assess the accuracy and completeness of HLCTS data, we tested the information contained in HLCTS's "allegation of violations" file and "overdue action" file against information contained in FERC's official project files. From our random sample of 40 projects, we identified 17 allegations from 11 projects and 35 overdue actions from 11 projects. These allegations and overdue actions contained 881 key dates and pieces of information (such as the date the allegation was received or the date a project was supposed to provide information to FERC). We compared information contained in HLCTS printouts for the 881 items with information from FERC project files to ensure that the HLCTS data were accurately entered into the system. For these 40 projects, we also checked over 1,000 hard copy documents contained in FERC's official records to ensure that HLCTS was complete.

The estimates we report are at the 95-percent confidence level. We estimate that between 87 and 100 percent of both allegations and overdue actions are included in the HLCTS data. We also estimate that between 93 and 100 percent of the key data in the allegation data base is accurate, and for overdue actions our estimate is between 98 and 100 percent.

To determine how FERC enforces requirements, including its use of penalties, we examined relevant provisions of the law, regulations, and implementing procedures. We also interviewed officials in the Office of Hydropower Licensing and Office of General Counsel, hydropower industry representatives, and a hydropower consultant. We reviewed documents pertinent to all penalties and compliance orders issued during the period covered by our review. Our analysis of compliance orders showed that in two cases, FERC issued orders rescinding previous orders. Both the original orders and the rescinding orders are not included in our totals.

We conducted our review between October 1992 and March 1994 in accordance with generally accepted government auditing standards.

Major Contributors to This Report

Resources, Community, and Economic Development Division, Washington, D.C.	James E. Wells, Jr., Associate Director Michael Blair, Assistant Director James Kennedy, Assignment Manager Larkin K. Jennings, Evaluator-in-Charge Karen Bracey, Senior Research Analyst Annette Wright, Operations Research Analyst
Office of General Counsel	Jackie A. Goff, Senior Attorney

Related GAO Products

Electricity Regulation: Electric Consumers Protection Act's Effects on Licensing Hydroelectric Dams (GAO/RCED-92-246, Sept. 18, 1992).

Hydroelectric Dams: Interior Favors Removing Elwha River Dams, but Who Should Pay Is Undecided (GAO/RCED-92-168, June 5, 1992).

Electricity Regulation: Issues Concerning the Hydroelectric Project Licensing Process (GAO/RCED-91-120, May 10, 1991).

Hydroelectric Dams: Costs and Alternatives for Restoring Fisheries in the Elwha River (GAO/RCED-91-104, Mar. 27, 1991).

Hydroelectric Dams: Issues Surrounding Columbia River Basin Juvenile Fish Bypasses (GAO/RCED-90-180, Sept. 6, 1990).

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Energy Regulation: Enforcement of Requirements Imposed on Hydropower Projects Needs Strengthening (GAO/RCED-88-60, Mar. 4, 1988).

Energy Regulation: Allegations Concerning the Development of Fishways at Hydropower Projects (GAO/RCED-88-186, July 28, 1988).

Energy Regulation: Hydropower Impacts on Fish Should Be Adequately Considered (GAO/RCED-86-99, May 20, 1986).

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