Sunrise Analysis of A Proposal to Regulate Crane Operators

A Report to the Governor and the Legislature of the State of Hawaii

THE AUDITOR
STATE OF HAWAII

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Submitted by

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Report No. 93-12
November 1993

Foreword

The Sunset Law, or the Hawaii Regulatory Licensing Reform Act of 1977, contains a sunrise provision which requires that measures proposing to regulate professions or vocations be referred to the State Auditor for analysis prior to enactment. The Auditor is responsible for reporting the results of the analysis to the Legislature.

This report evaluates the regulation of crane operators as proposed in House Bill No. 1931, introduced in the Regular Session of 1993. The Legislature requested this study in House Concurrent Resolution No. 97 of the session. The study presents our findings on whether the proposed regulation complies with policies in the Sunset Law and whether there is a reasonable need to regulate crane operators to protect the health, safety, and welfare of the public. It concludes with our recommendation on whether the proposed regulation should be enacted.

We acknowledge the cooperation of the Department of Commerce and Consumer Affairs, the Department of Labor and Industrial Relations, and other organizations and individuals knowledgeable about the occupation whom we contacted during the course of our analysis.

Marion M. Higa
State Auditor

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Chapter 1
Introduction

The Sunset Law, or the Hawaii Regulatory Licensing Reform Act (Chapter 26H, Hawaii Revised Statutes), contains a sunrise provision requiring that measures proposing to regulate professions or vocations be referred to the State Auditor for analysis prior to enactment. The Auditor is to determine whether regulation is necessary to protect the health, safety, and welfare of consumers.

This report evaluates whether the regulation of crane operators proposed in House Bill No. 1931, introduced in the Regular Session of 1993, complies with policies for occupational regulation in the Sunset Law. The Legislature requested this study in House Concurrent Resolution No. 97 of the 1993 session.

Background on Cranes and Crane Operators

Cranes and derricks are used in manufacturing, construction, and other industries to move heavy materials. By means of booms, jibs, or other mechanisms, they raise and lower these loads and move them horizontally while suspended.

The two basic types of cranes used in construction are mobile cranes and tower cranes. Mobile cranes move under their own power. For example, crawler cranes are mounted on tractor treads like a tank, truck-mounted cranes are fixed to a truck bed, and axle-based rough terrain cranes have oversized tires for greater maneuverability.

Tower cranes are tall, latticed structures often used in the construction of buildings. They are erected adjacent to or inside the building, and some can be made higher as construction progresses. Tower cranes are more likely to be used when projects are lengthy, job sites are constricted or congested, lift heights are extreme, the need for mobility is small but the lift frequency is high, and in other situations where a mobile crane is unsuitable.

A variety of cranes are used in manufacturing and other industries. For example, large gantry-mounted cranes load materials and containers onto ships, and some cranes can be floor-mounted, attached to a wall, or run overhead to move loads in warehouses, machine shops, and mills.

Derricks perform many functions similar to cranes, but unlike cranes, the hoisting engine is not an integral part of the machine. Derricks can be mounted on stiff legs, a column (or mast), or attached to a wall. They

are used for construction, for moving ship cargoes, and for dredging. Also, the rigid towers that support oil drills are called derricks.

Crane operators (including derrick operators here) usually learn the trade on the job. Employers may require them to be high school graduates. Some crane operators have graduated from construction equipment apprenticeship programs administered by union-management committees of the International Union of Operating Engineers (IUOE), AFL-CIO, and the Associated General Contractors of America. In Hawaii, most crane operators, and all tower crane operators, are members of the Operating Engineers Local Union No. 3 of the IUOE.

There were approximately 51,000 crane operators nationwide in 1990.[1] In 1992 about 180 worked in Hawaii. Of these, about 70 worked for the federal government; 60 in the construction industry; 30 in the transportation, communications, or utilities fields; 10 in manufacturing; and 10 in the wholesale or retail trades. These figures are expected to change little over the next few years.[2]

Proposal to Regulate Crane Operators

House Bill No. 1931 would establish a crane operators examining board in the Department of Commerce and Consumer Affairs. The bill covers tower cranes used in construction, demolition, or excavation work; hydraulic cranes; power-operated derricks; and mobile cranes with a capacity exceeding five tons.

Under the proposal, no one can lawfully operate a crane unless licensed by the board. In addition, crane operator apprentices must be registered by the board and work only under the supervision of licensed crane operators. Crane owners must register their cranes. The bill exempts engineers under the jurisdiction of the federal government; engineers or operators employed by public utilities or industrial manufacturing plants; and persons engaged in boating, fishing, agriculture, or arboriculture.

The five-member board would consist of a crane operator with at least ten years experience, one member to represent the interests of crane owners, and three public members. Among its duties, the board would be responsible for establishing qualifications for licensure, examining license applicants, and establishing a safety code for crane operation and maintenance.

Crane owners and operators are required to immediately report their crane accidents to the board, which is authorized to investigate the accident and take appropriate action. Incompetence or negligence by crane operators or apprentices can result in revocation or suspension of their license or registration. The board can also suspend or revoke a

crane owner's registration for failing to properly maintain the crane or permitting its unsafe operation. The board can impose civil penalties up to $1,000 on any operator or owner violating the licensing law or the board's rules.

Objectives of the Analysis

The objectives for this analysis were:

1. Determine whether there is a reasonable need to regulate the occupation to protect the health, safety, and welfare of the public.

2. Make recommendations based on our findings.

Scope and Methodology

To accomplish these objectives, we reviewed the literature on cranes, crane operators, and their regulation. We reviewed complaints, crane accident reports, and other evidence of harm to the public.

We obtained information from organizations representing crane operators. We interviewed representatives of the occupation, of Operating Engineers Local Union No. 3, of the construction industry, and staff of the Department of Commerce and Consumer Affairs and the Department of Labor and Industrial Relations. We focused on construction cranes because House Resolution No. 97 in requesting the study expressed special concern in this area.

Our work was performed from May 1993 through September 1993 in accordance with generally accepted government auditing standards.

Chapter 2
Findings and Recommendation

This chapter presents our findings and recommendation on the need to regulate crane operators. We conclude that licensing is not necessary, that existing protections are sufficient, and that House Bill No. 1931 which proposes licensing is flawed.

Summary of Findings

1. The regulation of crane operators is not warranted. Evidence that licensing would make construction sites safer is lacking while the costs of regulation would be considerable.

2. Other protections against harm already exist in both the public and private sectors.

3. The bill is flawed. Its exemptions are questionable and unclear, and some of its language conflicts with the proper aim of regulation.

Regulation of Crane Operators Is Not Warranted

The Sunset Law says that professions and vocations should be regulated only when necessary to protect the health, safety, and welfare of consumers. In assessing the need for regulation, the law asks the Auditor to consider the benefits and costs of regulation to taxpayers and whether consumers are at a disadvantage in choosing the provider.

It is unclear whether licensing crane operators would protect the public. Few states regulate them. We found that the businesses that use crane operators and cranes are not at a disadvantage. We also found that the projected costs of instituting regulation are considerable.

Uncertain benefits of licensing

Improperly operated cranes pose a danger to the health and safety of the public and construction workers. However, there is insufficient evidence that licensing crane operators would substantially reduce the risk of harm.

Nationally, cranes kill an average of 71 people and injure an average of 36 each year.[1] Most accidents involved cranes striking power lines or overturning. Other accidents resulted from the load dropping or the boom collapsing due to overloading, boom cable failure, or inappropriate dismantling procedures.

In Hawaii, records of the state Occupational Safety and Health Division show one death in 1990 when a crane struck an electrical line. Two other cranes flipped over and were damaged. In 1991, falling booms caused one death and one injury, and one crane overturned. In 1992, a crane overturned, another collapsed, and another rambled out of control; property damage was reported but no injuries. In 1993, two cranes tipped over and one injury was sustained.

Proponents of regulation claim that licensing would protect the public. Under administrative rules of the Department of Labor and Industrial Relations (DLIR), crane operators only need to meet certain physical and health requirements; be at least 18 years of age; and be able to understand signs, signals, and instructions. Licensing, proponents argue, would help screen out unqualified or incompetent crane operators through such means as mandatory training, written tests on knowledge of crane loads and hand signals, and practical examinations on operating cranes. Proponents of regulation also point out that cranes are becoming increasingly complex, requiring greater technical expertise and skill. These arguments in favor of regulation have merit and must not be taken lightly since human lives are at stake.

However, it is not clear that licensing is necessary to prevent crane accidents. The federal Occupational Safety and Health Administration (OSHA) says that "most crane accidents could have been easily prevented had some basic considerations been given to the safe use of cranes and had such considerations been incorporated into the preconstruction planning meeting." OSHA continues: "Prejob planning before actual crane operations begin can eliminate major craning hazards from the jobsite." Planning should include analyzing job hazards; making sure hand signals are understood by all; arranging for telephone or radio communication with the crane operator; and assessing the crane's load capacity.[2]

OSHA also emphasizes complying with OSHA regulations on rigging, load control, equipment inspection, and preventive maintenance. Our analysis of reports of crane accidents in Hawaii revealed a wide range of confirmed occupational safety and health violations including failure to adequately train employees, use authorized operators, keep cranes away from power lines, use equipment properly, conduct regular inspections, replace faulty parts, and other problems.

OSHA calls for using competent crane operators but has taken no position on mandatory licensing.[3] However, it is taking comments on a range of crane safety issues, including the need for licensing or other controls such as certification of crane operators by private organizations.[4]

Only a handful of states license crane operators. In Connecticut, Illinois, and New York, licensing is the responsibility of a board. Massachusetts, Montana, New Jersey, and Rhode Island license operators of hoisting machinery, which includes cranes. We found that these states had little evidence that regulating crane operators provided greater protection to the public.

Considerable cost of regulation

Regulation would be costly. The Sunset Law requires that regulation be avoided where its benefits to consumers are outweighed by its cost to taxpayers and where it unreasonably restricts entry into the occupation by all qualified persons. The proposed regulation of crane operators does not appear to meet these requirements.

House Bill No. 1931 provides little guidance concerning licensing requirements, so a precise cost assessment is not possible. However, the Department of Commerce and Consumer Affairs (DCCA) estimated roughly that an additional appropriation of $131,800 would be needed for the first year to establish a crane operators examining board consisting of five members. Start-up costs include $45,000 to develop examinations; $76,800 for personnel and operations; and $10,000 for board-related costs. DCCA estimates an annual cost of $86,800 following the start-up year.

Section 26-9(l), HRS authorizes DCCA to assess fees on applicants and licensees so long as the fees bear a reasonable relationship to the cost of services provided. House Bill No. 1931 proposes to regulate crane operators in the construction industry, who number about 60 in Hawaii. To fully recover first-year costs and reimburse the general fund, we calculate that an assessment of $2,197 on each of these licensees would be required. This per-licensee fee could be reduced somewhat by also charging registration fees to apprentices and crane owners, and renewal fees would presumably be lower than initial licensing fees. However, the fees would still be substantial.

We believe the State should not allocate its scarce resources to establish regulation of crane operators when the benefits of regulation are so uncertain. Moreover, charging fees to licensees to cover the State's costs could severely restrict entry into the occupation.

Consumers not disadvantaged

Consumers of the services of crane operators are not members of the public but construction companies and other businesses, who are not at a disadvantage. They have the experience and technical knowledge to protect themselves. It is not necessary for the State to institute regulation to protect them.

Other Protections Are in Place

We find that protection against crane accidents is already in place in both the public and private sectors. The federal government, state government, and the private sector all have programs to protect construction workers and the public. Moreover, the federal government is considering imposing stricter regulations. We see no reason to add another layer of regulation in the form of licensing. Also, many provisions in the proposed House Bill No. 1931 are similar to existing regulations, for example the development of a crane safety code, state authority to inspect and investigate, mandatory reporting of crane accidents, and civil penalties.

Federal protection

The federal Occupational Safety and Health Administration has adopted regulations covering crane inspections. These regulations incorporate by reference the criteria for crane operators that are in the American National Standards Institute's (ANSI) safety standards for cranes and derricks. These standards were developed by ANSI and the American Society of Mechanical Engineers (ASME). They include requirements governing the qualifications of crane operators and their conduct. For example, the ANSI standard requires mobile and locomotive crane operators to pass written or oral, and operating examinations or give evidence of qualifications and experience. In addition, the operator must meet certain vision and physical requirements.

In response to the collapse of a tower crane in November 1989 that resulted in several deaths in San Francisco, the federal OSHA reviewed crane accidents. It found that an average of 71 fatalities and 36 injuries occurred annually nationwide from January 1985 through December 1989. Slightly more than half of the fatalities were caused by boom or crane contact with energized power lines.

As a result of its study, OSHA is seeking professional and expert responses on whether its existing regulations are adequate. OSHA will be assessing the need for stricter criteria for crane operators and other revisions to its current standards.

State protection

Under Chapter 396, Hawaii Revised Statutes, the Department of Labor and Industrial Relations administers occupational safety and health standards throughout Hawaii. DLIR does not license crane operators, but its Occupational Safety and Health Division enforces standards for crane safety. The proposed bill appears to duplicate many of DLIR's current responsibilities.

The DLIR's administrative rules require employers who are involved with construction or related activities to provide safe and healthful work

places and practices that protect the employees and the affected general public as well. Machinery and equipment must be operated only by persons qualified by training or experience, and all work must be performed and supervised only by competent persons.[5]

The rules contain extensive and detailed requirements for the operation and maintenance of cranes and derricks both in construction and in general industry.[6] The requirements parallel those of OSHA. They also incorporate the ANSI standards.

Hawaii's crane safety rules cover handling loads safely, using hand signals, barricading the work area, avoiding power lines, protecting moving parts, braking and shutting off the crane, complying with manufacturers' specifications, inspecting equipment, posting load capacities and hazard warnings, and related matters. Moreover, the rules require that cranes and derricks be operated only by trained or experienced operators. Qualifications include the ability to comprehend signs, signals, and instructions; being age 18 or older if operating certain types of cranes; and meeting certain vision, hearing, and strength requirements.

Officials of the state Occupational Safety and Health Division are authorized to make unannounced inspections for hazardous conditions and to investigate workers' complaints. They may also investigate accidents resulting in disability or death, issue citations, and assess civil penalties. From 1990 to the present, the division investigated nine crane accidents and found a total of 30 alleged violations, most of them serious. The division imposed fines ranging from $70 to $10,000 for the violations.

Private sector protection

In Hawaii, the Joint Apprenticeship Committee for Operating Engineers (made up of representatives of the General Contractors Labor Association and Building Industry Labor Association, and Local 3 of the International Union of Operating Engineers) offers an apprenticeship training program in construction equipment operation including crane operation.[7] The apprenticeship program began in 1967 and has been approved by the DLIR under Chapter 372, HRS.

The apprenticeship program helps ensure that union crane operators are adequately trained, and that they are medically fit and supervised by experienced employees during their training. Since most crane operators in Hawaii are unionized, the public and workers on the job are protected.

The program requires apprentices to complete 6,000 hours of on-the-job training, including 400 hours of orientation on safety and general maintenance; 3,000 hours with excavating and other types of earthmoving, compacting, and paving equipment; 1,000 hours with

hoisting equipment; 200 hours with stationary equipment like air compressors, pumps, drilling and boring equipment; and 1,400 hours with gradesetting, plans, and earthwork. Apprentices also are trained in first aid and defensive driving and spend 240 hours in the classroom. Journeymen supervise the apprentices while they gain experience. The program takes three or four years to complete.

Training includes experience with crawler-mounted and rubber-tire mounted cranes, derricks, hoists, piledriving rigs, tower cranes, forklifts, and other equipment. Apprentices must undergo a medical examination and receive a certificate of fitness for crane and hoist operators based on the physical qualifications set forth in DLIR's rules.

In addition to the training program, the collective bargaining agreement between the contractors and Local 3 offers other protections. Individuals registering with the union's job placement center describe the classification of work sought and which they are qualified to perform. When making requests to the job placement center, the contractor provides the classification code number and the make and model of the equipment to be operated. The job placement center then contacts persons registered in that classification and dispatches the first employee who claims to have the necessary experience. The contractor may terminate any employee who does not have the experience specified in the request.[8]

If a contractor fails to operate a particular piece of equipment as specified in the agreement's hiring procedures or worker classification schedule, the union may shut down that equipment by withdrawing the operator if the contractor does not correct the improper hiring within 24 hours after being notified by the union. Furthermore, employees may refuse to operate any equipment found unsafe by the Occupational Safety and Health Division.[9]

Finally, employers may be legally liable for damages and for violations of safety standards. Since they can be held responsible for the actions of incompetent crane operators and since accidents can damage or destroy very expensive cranes, it is in their interest to ensure that their crane operators are qualified.

House Bill No. 1931 Is Flawed

The bill has several deficiencies. It exempts certain crane operators—those employed by public utilities or industrial manufacturing plants and those engaging in boating, fishing, agriculture, and arboriculture—without apparent reason. The need to prevent harm presumably exists in these sectors as in construction.

Furthermore, the exemptions are confusing. For example, it is unclear whether "boating" means recreational boating, commercial shipping, or both.

Also, the bill specifically states that one member of the licensing board must represent the interests of crane owners. This language conflicts with the purpose of licensing and licensing boards. While membership on boards may include representatives of different occupations, the purpose of each member is to protect the public welfare, not the interests of the profession.

Recommendation

We recommend that House Bill No. 1931 not be enacted.

Notes

Chapter 1

1. U.S., Department of Labor, *Occupational Outlook Handbook*, 1992-93 Edition, May 1992, p. 418.

2. Hawaii, Department of Labor and Industrial Relations, Research and Statistics Office, "Employment by Occupation and Industry, 1992 and Projected 1997," run date August 2, 1993, pp. 50-51.

Chapter 2

1. U.S., Department of Labor, "Crane Safety—Advance Notice of Proposed Rulemaking," Federal Register, Volume 57, No. 202, U.S. Government Printing Office, October 19, 1992, p. 47748.

2. U.S., Department of Labor, OSH Technical Manual, Washington, D.C., February 5, 1990, Chapter 13, "Cranes and Derricks: The Reasons for Crane Accidents," pp. 13-27, 13-28.

3. Ibid., p. 13-27; U.S., Department of Labor, "Advance Notice," p. 47747.

4. U.S., Department of Labor, "Crane Safety—Advance Notice," p. 47747.

5. Sections 12-110-2(d) and 12-110-7, Hawaii Administrative Rules.

6. Title 12, Subtitle 8, Chapters 84 and 136, Hawaii Administrative Rules.

7. Standards of the Joint Apprenticeship Program for Operating Engineers in the State of Hawaii, Adopted November 14, 1967, Amended June 14, 1993.

8. 1987-1992 Master Agreement for Hawaii Between General Contractors Labor Association, Labor Association of the Building Industry Association, and Operating Engineers Local Union No. 3 of the International Union of Operating Engineers, AFL-CIO, Section 25.09.15, p. 161; Section 25.02.02, p. 100; Section 25.09.34, pp. 171-172; and Section 25.09.46, p. 177.

9. Ibid., Section 07.04.00, pg. 15 and Section 16.03.13, p. 61.

Response of the Affected Agency

Comments on Agency Response

We transmitted a draft of this report to the Department of Commerce and Consumer Affairs on October 19, 1993. A copy of the transmittal letter is included as Attachment 1. The department did not submit a response.

Attachment 1

STATE OF HAWAII
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MARION M. HIGA
State Auditor

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October 19, 1993

COPY

The Honorable Clifford K. Higa, Director
Department of Commerce and Consumer Affairs
Kamamalu Building, 2nd Floor
1010 Richards Street
Honolulu, Hawaii 96813

Dear Mr. Higa:

Enclosed for your information are three copies, numbered 6 to 8 of our draft report, *Sunrise Analysis of a Proposal to Regulate Crane Operators*. We ask that you telephone us by Thursday, October 21, 1993, on whether you intend to comment on our recommendations. If you wish your comments to be included in the report, please submit them no later than Tuesday, November 2, 1993.

The Governor and presiding officers of the two houses of the Legislature have also been provided copies of this draft report.

Since this report is not in final form and changes may be made to it, access to the report should be restricted to those assisting you in preparing your response. Public release of the report will be made solely by our office and only after the report is published in its final form.

Sincerely,

Marion M. Higa

Marion M. Higa
State Auditor

Enclosures