

1990

# Mor-Flo Industries, Inc. and Polaris Water Heaters/ Arlington Place v. Industrial Commission of Utah Safety Division : Brief of Respondent

Utah Court of Appeals

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BRIEF

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900510-CA

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IN THE UTAH COURT OF APPEALS

MOR-FLO INDUSTRIES, INC. and	*	
POLARIS WATER HEATERS/ARLINGTON	*	
PLACE,	*	APPELLATE CASE NO. 900510-CA
Petitioners,	*	
(Respondents Below)	*	(APPEAL FROM AN ORDER OF
vs.	*	THE INDUSTRIAL COMMISSION
	*	OF UTAH)
INDUSTRIAL COMMISSION OF UTAH	*	
SAFETY DIVISION	*	
Respondent.	*	PRIORITY NO. 7
(Charging Party Below)	*	
	*	

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**FILED**

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## STATEMENT OF JURISDICTION

The Industrial Commission (hereafter "Commission") concurs with the jurisdictional statement of Petitioner Mor-Flo Industries, Inc. (hereafter "Mor-Flo").

## STATEMENT OF ISSUE PRESENTED

Whether a device designed to provide both heated potable water and space heat in a business establishment, but which did not exceed (1) a heat input of 200,000 BTU/hr., (2) a water temperature of 210 degrees F., or (3) a water-containing capacity of 120 gallons was subject to regulation by the Industrial Commission under the statutory authority of Utah Code Annotated Sections 35-7-5 et. seq. (hereafter "Boiler Code"), and The State of Utah Boiler and Pressure Vessel Rules and Regulations of the Industrial Commission of Utah, Safety Division (hereafter "Boiler Rules").

THE APPROPRIATE STANDARD OF REVIEW SHOULD  
BE THE INTERMEDIATE STANDARD WHICH IS THAT  
OF REASONABLENESS AND RATIONALITY

In reviewing interpretations of general questions of law, the standard to be applied is the correction-of-error standard. The standard requires this Court to uphold the Commission on a question if the Court determines that the Commission's statutory interpretation is not erroneous. U.C.A. Section 63-46b-16(4)(d); Bevans v. Ind. Commission, 790 P.2d 573 (Utah Ct. App. 1990).

With regard to questions of fact, the standard is whether the findings of the Commission are supported by substantial evidence in the record. Under this standard, a party challenging the Commission's findings of fact must marshall all of the evidence supporting the findings and show that despite the supporting facts, and in light of the conflicting or contradictory evidence, the findings are not supported by substantial evidence. Grace Drilling v. Bd. of Review, 776 P.2d 63, 68 (Utah Ct. App 1989). This Court will not substitute its judgment as between two reasonably conflicting views, even though the Court may have come to a different conclusion had the case been before it for de novo review. Where inconsistent inferences can be drawn from the same evidence, it is for the Commission to draw the inferences. Id. citing Bd. of Educ. of Montgomery County v. Paynter, 491 A.2d 1186, 1193 (1985). Where technical or scientific factors are involved such as in the instant case, the scope of review tends to narrow. FPC v. Florida Power & Light, 404 U.S. 453 (1972).

The standard for mixed questions of law and fact is that of "reasonableness and rationality." Pro-Benefit Staffing, Inc. v Bd. of Review, 775 P.2d 439 (Utah Ct. App. 1989).

The proper standard of review in the instant case is that for mixed questions of law and fact, i.e. "reasonableness and rationality." Taylor v. Utah State Training School, 775 P.2d 432, 434 (Utah Ct. App. 1989).

The instant case involves whether a device used for space heating meets the safety requirements of statute and agency rule, and thus, is the type of mixed law and fact case which "emphasizes the pivotal role of agency expertise." Id. at 434 citing Hurley v. Board of Review, 767 P.2d 524 (Utah 1988). This Court further said that the decision should be judged on a reasonableness standard when issues of mixed law and fact can be illuminated by an agency's expertise. Id. at 434. The Commission respectfully submits that it is uniquely suited to determining technical questions in relation to legal issues within the scope of its statutory authority, and that the instant case should be judged on the reasonableness standard for this reason.

#### CONSTITUTIONAL AND STATUTORY PROVISIONS

Section 35-7-5 et seq. U.C.A. (Addendum A).

Selected provisions of the Boiler and Pressure Vessel Code published by ASME (1986 edition) as adopted in Section 35-7-5 et seq. U.C.A. (Addendum B).

Selected provisions of the 1986 Addenda to the ASME Code as adopted in Section 35-7-5 et seq. U.C.A. (Addendum C).

Selected provisions of the 1988 Addenda to the ASME Code as adopted in Section 35-7-5 et seq. U.C.A. (Addendum D).

The State of Utah Boiler and Pressure Vessel Rules and Regulations. (Addendum E).

Section 58-56-4 U.C.A. (Addendum F).

Section 26-15-3 U.C.A. (Addendum G).

## STATEMENT OF THE CASE

The Commission adopts the "Nature of the Proceedings Below" portion of the Mor-Flo brief except that the Commission would change the first sentence in this section to read:

On March 9, 1989, and again on August 30, 1989, the Safety Division of the Industrial Commission of Utah the "Division") sent a letter to the Arlington Place condominiums requiring the removal from service of the Polaris water heaters ("Order for Removal") located there within thirty (30) days.

## STATEMENT OF FACTS AS FOUND BY THE ADMINISTRATIVE LAW JUDGE AND THE COMMISSION

The findings of fact by the administrative law judge as affirmed by the Commission are essentially as follows:

The units at issue in this matter are produced by Mor-Flo, and consist of a water heating unit composed of an external unit through which heated water is pumped to heat space. (R. 37, 42). Controls on the water heating unit preclude heating beyond 210 degrees Fahrenheit. (R. 37).

Several of the units were installed in a multi-family condominium facility. (R.13). On February 27, 1989, the units were inspected by a member of the Safety Division of the

Commission (hereafter "Division"), and were found not to be registered by the American Society of Mechanical Engineers (ASME) in accordance with Division regulations. (R. 10-14, 16-19). On both March 9, 1989, and August 30, 1989, the Division ordered the units removed. (R. 14).

Mor-Flo appealed the Order by alleging that the units were water heaters, and thus not subject to Division jurisdiction pursuant to an exemption granted by Part II, Section 16 of the Boiler Rules. (Petitioner's Motion for Review, p. 3 incorporating Petitioner's Post-Hearing Memo, p. 7, 8). Under this section, hot water supply boilers and water heaters which do not exceed a capacity of 120 gallons, or which do not exceed 210 degrees, are exempt. (Id.).

The Division classified the units as hot water heating boilers due to their use as space heaters. (R. 16-18). This classification focused on the entire function of the units rather than limiting review to the water heater function. (Id.) The Division also relied on the definition of a hot water heating boiler contained in Part I, Section 6 of the Boiler Rules. Under Section 6, the definition includes a unit from which hot water is circulated for heating purposes, and which operates at temperatures not exceeding 250 degrees. (R. 18).



After examining all of the statements, briefs, and testimony submitted, the administrative law judge concluded that the Division presented the most "favorable" position. She further concluded that the legislative charge to the Division was to provide for regular inspections of heating devices in multi-family dwellings and public buildings, and that use of the devices for other purposes such as heating water did not remove them from Division jurisdiction.

The units in question were found not to have been ASME approved for "reasons which were not presented at the hearing." The judge further found that the standard, although confining, was not unreasonable or arbitrary, and that Mor-Flo could have obtained appropriate approval of their units by ASME or could have worked through the legislature to change the standards. She also did not consider it appropriate to create a definitional exception and remove the units from Division jurisdiction since such an exception would circumvent the intent of the legislature to provide for the public safety. See, Findings of Fact, Conclusions of Law and Order, Ind. Commission of Utah by and through the Safety Division v. Polaris Water Heaters/Arlington Place (hereafter Polaris), Case No. S-B 89-1 (May 4, 1990).

#### LEGAL CONCLUSIONS OF THE ADMINISTRATIVE LAW JUDGE

The administrative law judge concluded that the Polaris units manufactured by Mor-Flo/American Comfort Systems were within the jurisdiction of the Safety Division of the Industrial Commission, and did not meet the standards as outlined in the rules and regulations as adopted by the Division. She then ordered enforcement of the Order for Removal of the units from the Arlington Place condominiums issued by the Division on August 30, 1989. Id.

#### ACTION BY THE COMMISSION ON THE MOTION FOR REVIEW

On August 22, 1990, the Commission denied a motion for review by Polaris/Arlington Place and affirmed the order of the administrative law judge. See Order Denying Motion for Review, Polaris, Case No. S-B 89-1 (Aug. 22, 1990).

#### SUMMARY OF ARGUMENTS

1. The Commission properly exercised its authority. The legislature enacted the Boiler Act in 1967 which provided for safe construction, installation, repair, use, and operation of boilers and pressure vessels. It also provided for the Commission to adopt and enforce safety rules and regulations, to administer the Act, and to supervise the Act.

Under the Act, the Commission promulgated the Boiler Rules, and the current revision was effective on October 1, 1988. Additional rules were developed to conform to the Administrative Rulemaking Act, and were effective in 1989. These additional rules incorporated the Boiler Rules. The Commission in accordance with the Act provided definitions, and other safety rules to implement the safety purposes of the Act.

Based on the Act, the Boiler Rules and the ASME Code, the Commission properly determined that the Polaris water heating boiler with a space heating function was required to be ASME approved. Mor-Flo can build to ASME standards, and has done so. In this case, Mor-Flo desires not to do so. This case is not one in which the state of the art is not sufficiently developed to produce an ASME product.

The Commission correctly applied the facts to the law in a consistent manner with the statutes and their safety purpose. For the above reasons, the argument that the Commission has exceeded the bounds of the legislative mandate must be rejected, and the Order of the Commission upheld by this Court.

2. In the instant case, substantial evidence supports the factual conclusions of the administrative law judge and Commission even though "reasonableness and rationality" is the standard of review for mixed questions of law and fact. The

two expert witnesses for the Commission were both qualified by reason of extensive training and experience. The Polaris unit in question did not meet the requirements of the Boiler Rules and statute since it was not certified by ASME. This unit was a dual purpose unit which was not exempt based on its space heating purpose, although it was exempt based on its hot water supply purpose. Mor-Flo did not qualify either of their witnesses as experts. This Court should give less weight to Mor-Flo's witnesses. When the evidence is viewed from this perspective, the evidence of record overwhelmingly supports the Order of the Commission, and the Order must be affirmed.

3. Mor-Flo cites two sections of the U.C.A which were not law at the time of the inspection and initial removal order. Although Mor-Flo alleges that Sections 58-56-4 and 26-15-3 were the governing statutes to support its argument that ANSI should be the standard used and not the ASME, Section 58-56-4 did not become effective until April 24, 1989. The version of U.C.A. Section 26-15-3 which was in effect during the critical time frame did not mention ANSI. Even if these statutes were operative during this period, ANSI is a department of health standard, and the Boiler Code required ASME to be the governing standard for the Industrial Commission. This Court should therefore determine that the versions of the statutes cited by Mor-Flo were not applicable, and that the Order of the Industrial Commission should be affirmed.

4. Mor-Flo claims that its water heaters are exempt under the Code even when they provide space heating. The Commission has relied on Part II, Section 6(j) of the Boiler Rules to define a hot water heating boiler as one in which among other provisions "hot water is circulated for heating purposes." The definition relied upon by Mor-Flo which is at Part II, Section 6(m), Boiler Rules, does not contain this critical space heating definition. Mor-Flo also relies on a definition in the ASME Code which states clearly that it does not apply to units such as the Polaris. In any event, the provision of the ASME Code does require ASME markings even though the item may otherwise be exempt. For these reasons, Mor-Flo's argument must be rejected, and the Order of the Commission affirmed.

5. Mor-Flo argues that Utah is alone among the states in its interpretation of the ASME Code and its construction requirements. Mor-Flo's only support for this argument was a weak statement by one of Mor-Flo's witnesses which did not reflect the certainty that Mor-Flo's argument seemed to exude. For this reason, this argument by Mor-Flo must be rejected.

6. Mor-Flo alleged that the Commission's interpretation of the ASME Code is inconsistent with interpretations made by ASME. Although Mor-Flo states that the ASME did not agree that a water heater becomes a boiler when it is used for space heating, the record shows that the ASME never answered the question which was posited by Mor-Flo. It would

be more correct to conclude that the ASME made no statement on the question, and that the Commission's interpretation was not at variance with the ASME. Another contention involved a letter sent by Mor-Flo to the ASME which posited two questions allegedly to determine whether the nonconforming device was exempt under the ASME standards. Neither of the questions posited were framed correctly, thus the answers received do not shed any light on this issue. Expert testimony on behalf of the Commission showed that the Commission was concerned with safety, and that when these boiler units are built under the ASME Code, the Commission could be sure that these units are safe in terms of material components and construction. For these reasons, this Mor-Flo argument must be rejected and the Order of the Commission affirmed.

#### JURISDICTION OF THE COMMISSION

The Commission has jurisdiction over boilers and pressure vessels used in, among other locations, business establishments and "every place where work[ers] or the public may be exposed to risks." U.C.A. Sect. 35-7-5 et. seq. Boiler Rules were adopted on February 24, 1978 after a period of public comment and became effective May 1, 1978. Boiler Rules (Eff. Oct. 1, 1988).

The Boiler Rules implement U.C.A. Sects. 35-7-5 et. seq. and give the Commission authority over boilers and pressure vessels in apartments or multi-family dwellings of over four units, and in public buildings, among others. Boiler Rules, Sect. 16(k). The location of the Polaris units were at Arlington Place, a condominium complex located in Salt Lake City. (R. 12-13).

Mor-Flo contends that the Commission has improperly attempted to legislate by "adding and expanding the scope of the Utah Boiler Code to regulate the use of water heaters that provide both potable water and space heating." (Petitioner's Brief at 19 (hereafter "PB")). To the contrary, the Commission has properly interpreted the statute in light of the legislative concern for worker and public safety by ruling that Mor-Flo's device is a functional hybrid subject to regulation for both functions. (Commission Order p. 2).

Mor-Flo argues that its device should be regulated primarily as a water heater, and the fact that it is used to heat space does not change its basic character. (R. 45-46) This argument fails to address the primary concern of the Commission which is the lack of the Code required ASME approval of the Polaris units. (Order, p. 2).

THE INDUSTRIAL COMMISSION HAS PROPERLY  
EXERCISED ITS AUTHORITY IN THIS CASE

Mor-Flo alleges that the Industrial Commission has exceeded its authority by improperly "attempting to legislate by expanding the scope of the Utah Boiler Code to regulate the use of water heaters that provide both potable water and space heating." (PB 19). This contention is without merit. The Industrial Commission simply exercised the reasonable prerogatives given to it by the legislature to make rules and to adjudicate as required.

It will be helpful to review what the legislature did, and in order to carry out the legislative purpose, what the Commission did in response. The legislature enacted a statute in 1967, The Boiler and Pressure Vessel Act, which set a primary standard to guide the Industrial Commission. This Act provided in pertinent part:

. . . [F]or the safe construction, installation, repair, use and operation of boilers and pressure vessels, except those under federal control and certain others; providing for inspection of boilers, . . . and enforcement of safety rules and regulations adopted by [the] Industrial Commission who shall administer [the] act (sic) and have supervision thereof, providing penalties for violation of [the] Act. . . .  
See L. 1967, ch. 69, Title of Act.

In accordance with the provisions of U.C.A. Sections 35-7-5 through 35-7-9, these provisions authorized the Industrial Commission to formulate rules, definitions, regulations, and standards which were designed for the



protection of human life and property by deterring unsafe or dangerous construction, installation, inspection, operation, maintenance, and repair of boilers and pressure vessels in Utah. To further the purpose of the Act, the Industrial Commission promulgated the Boiler and Pressure Vessel Rules and Regulations of the Industrial Commission which were effective on July 1, 1967.

There have been five revisions of the Boiler Rules since the first rules were adopted. The current rules were authorized and adopted by the Commission with an effective date of October 1, 1988. Boiler Rules (Eff. October 1, 1988).

To conform to requirements of the Administrative Rulemaking Act, the Commission promulgated rules which incorporated the rules and regulations discussed in the previous paragraph, and which also added some procedural and due process provisions. R488-201-1 through R488-201-11, Utah Administrative Code (1990). These provisions were effective in 1989.

These additional provisions provided for, among others, variances to be allowed where there would not be any material increase to the safety of employees, general public, but which would work undue hardship on the owner/user; inspection of boilers within the jurisdiction of the Safety Division, Industrial Commission; incorporation of the October 1, 1988 rules; appointment of an advisory board to the

Industrial Commission; and procedures to allow the Safety Division to order nonconforming boilers and vessels out of service. Id. at R488-201-1, -2, -3, -4, -5, -7.

Under R488-201-8, the denial of a permit to operate the Polaris boiler was an informal adjudicative action commenced by the agency under its authority granted by the Boiler Act and based on U.C.A. Section 63-46b-3. The boiler inspector, Parsell, was considered to be the presiding officer by 63-46b-3. Since an informal hearing was requested by Mor-Flo, the Commission appointed an administrative law judge, Judge Moffitt, to preside based on R488-201-10.

As can be seen by a review of the statutory provisions of the Boiler Act, this Act did not provide all the particulars required, and so the Commission was authorized to provide sufficient fleshing out so that the legislature's safety purposes could be fulfilled.

It is clear that the Commission may be authorized to provide the details required in promoting the purposes of the Boiler Act, and in carrying it into effect when legislation provides for such authority. In this case, the Boiler Act in unambiguous terms states that the Act required the Commission to adopt safety rules and regulations, to administer the Act, and to supervise the Act. Thus, the Commission not only is obligated to interpret the Act, but it must within standards and limits set by the legislature formulate regulations and

standards, definitions, rules, and related matters which are all designed to protect human life and property from unsafe or dangerous devices within the scope of the Boiler Act, and this must be accomplished in a rapidly changing technological world.

The legislature has required all hot water heating boilers to be ASME certified unless exempted. (U.C.A. Section 35-7-6; R. 16) The Commission has properly determined that the Polaris is not entitled to an exemption, and has classified it as being within the definition of a hot water heating boiler based on its characteristics and space heating function. (R. 16). The Commission's argument supporting this view is shown at page 18 of this brief.

In a leading case, it was similarly argued that a board was exceeding its authority, and was countermanding the statutory plan, the Court in that case responded:

. . . [It was not] a reasonable canon of interpretation that the draftsman of acts delegating agency powers, as a practical and realistic matter can or do include specific consideration of every evil sought to be corrected.

. . . [N]o great acquaintance with practical affairs is required to know that such prescience, either in fact or in the minds of [the legislature], does not exist. Its very absence, moreover, is precisely one of the reasons why regulatory agencies such as the Commission are created, for it is the fond hope of their authors that they bring to their work the expert's familiarity with industry conditions which members of the delegating legislatures cannot be expected to possess. American Trucking Asso. v. United States, 344 U.S. 298, 309-310 (1953).

The argument between Mor-Flo and the Commission illustrates the reason why administrative agencies have some authority from the legislature to make rules and to adjudicate factual situations to determine whether the use and construction of particular and unforeseen devices further the safety aims of the legislation in question. Mor-Flo argues that its boiler when used in a space heating function is a water heater and is subject to exemption as such. (PB 21).

The Commission has determined that the Polaris hybrid boiler is exempt as a water heater at least as to its space heating function since it more appropriately fits the description of a hot water heating boiler used for space heating purposes. (Commission Order 2; R. 19). This finding illustrates a classic example where an agency has been required to resolve an issue concerning how to treat a technological hybrid which has some features which would normally be exempted from regulation, and other aspects which may not be subject to exemption. (R. 16-18).

The Boiler Act mandates the Commission to impliedly and expressly review the Boiler Act, the ASME rules which were incorporated by the Boiler Act, and the rules which the Commission adopted to carry out the purposes of the legislation. The legislature has fixed the limits of Commission action and has provided standards to guide Commission determinations by the statutory framework. The Commission used its expertise to determine that the Polaris

water heating boiler used for space heating purposes fell within the strictures of the Boiler Act and its related rules and regulations.

Mor-Flo does not claim that it cannot build ASME certified units, because Mor-Flo has built such certified units previously. Its contention is that it is not required by Utah law to do so. (R. 55). Contrary to Mor-Flo's assertion that there are no ASME construction specifications in the Utah Boiler laws, it was testified by an expert on the ASME that "there is nothing peculiar about . . . space limitations to indicate that [the Polaris] could not be constructed according to ASME standards . . . ." (R. 32). In fact, Mor-Flo referred to the unit in the instant case as a Polaris 2 which Mor-Flo described as not ASME certified, while Mor-Flo stated that the "original" Polaris model was ASME certified. (R. 55; R. 37). Thus, this case does not involve a deficiency in the state of the art rendering Mor-Flo incapable of building an ASME version of Polaris, but involves merely a discretionary decision based on economics or other considerations. (R. 54).

Mor-Flo cites this Court to Mountain States Tel & Tel. Co. v. Public Service Commission, 155 P. 2d 184 (1945), and Matter of Cr. Invest., 754 P. 2d 633 (Utah 1988) for the proposition that the Commission has "no authority under any rule of statutory construction to add, enlarge, supply, expand, extend or improve the provisions of a statute to meet a situation not provided for." This language does not appear in

either of the cited cases. The Commission did not overreach as this language would lead one to believe. The Commission read the statute and applied the facts to the law. Although Mor-Flo claims that its Polaris boiler is not clearly defined in the Boiler Act and the Boiler Rules, the Commission respectfully submits that it applied the law and rules in a manner completely consistent with the statutes and their safety purposes.

Even though the Commission must conform to the terms, policies and purposes of the Act, it may interpret the Boiler Act and Boiler Rules in a manner which is not in all respects spelled out by the Act in detail. National Petroleum Refiners Association v. F.T.C., 482 F. 2d 672, 680 (1973).

For the above reasons, the argument that the Commission has exceeded the bounds of the legislative mandate must be dismissed, and the Order of the Commission must be upheld by this Court.

SUBSTANTIAL EVIDENCE SUPPORTS THE DECISIONS OF  
THE ADMINISTRATIVE LAW JUDGE AND THE ORDER OF THE  
INDUSTRIAL COMMISSION WHICH SHOULD BE AFFIRMED  
PURSUANT TO THE APPROPRIATE STANDARD OF REVIEW

For the reasons discussed previously, this Court should apply the "reasonableness and rationality" standard of review since this case involves mixed questions of law and fact. Taylor v. Utah State Training School, 775 P.2d 432 (Utah

App. 1989). Even if this Court concludes that the standard of review should be that of substantial evidence in the record, the record shows evidence of sufficient quality to support the higher standard.

In the instant case, substantial evidence supports the factual conclusions of the administrative law judge and Commission. The foregoing section of this brief entitled "STATEMENT OF THE CASE" which includes the findings of fact by the administrative law judge and the "ACTION BY THE COMMISSION ON THE MOTION FOR REVIEW," are referenced to the applicable portions of the record, and other pertinent documents which support both the administrative law judge and the Commission.

The expert witnesses for the Commission were both qualified by reason of extensive training and long experience. (R. 6-7, 29-30). There was no challenge by Mor-Flo as to their qualifications.

James Parsell, director of the Safety Division, testified that he had been inspector of boiler and pressure vessels since 1971, and that he had worked for Hartford Insurance Company for six years. He has worked for the Industrial Commission for about 13 years. (R. 6-7). He possessed both a certificate from the University of Utah and the national board of ASME. (R. 7, 9). He further stated that certified inspectors from the national board of ASME inspect the units (boilers and pressure vessels) during manufacture to

be sure that they have the "right material, right welding, and such before [they are] passed." Only if the units are approved will the ASME place an ASME stamp on them. (R. 8).

Parsell also testified that the ASME has been adopted by Utah through its state code, and that an administrative rule book was adopted (described as a blue book) which explained the code. (R. 9). Based on a telephone tip that a unit which did not meet code requirements was being used at Arlington Place, a condominium apartment building with over five dwellings (R. 13), he inspected the unit located in a closet and found that it was being used for space heating and to supply potable water. (R. 10). His inspection authority was based on paragraph 16(k), Boiler Rules which impliedly provided jurisdiction over apartment houses with over four family units. (R. 16).

Parsell testified that the unit was a 180,000 BTU unit which was not certified by ASME in accordance with Article J, page three of the "blue book." (R. 11; Para. 6(j), Boiler Rules). According to Parsell, any unit that heats "up to 250 degrees or up to 160 psi has to be code." (R. 11). He further identified the unit as a Polaris unit produced by Mor-Flo/American Comfort Systems. (R. 15; Exhibit D-1)



Parsell described the unit as a dual function unit which fell under paragraph 6(j) for its space heating purpose, and under paragraph 6(k) for its hot water supply purpose. (R. 11-12).

. . . [A] boiler in which no steam is generated, from which hot water is circulated for heating purposes and then returned to the boiler, and which operates at a pressure not exceeding 160 psig and/or at temperatures of 250 degrees F. at or near the boiler outlet. Emphasis added.

Paragraph 6(k), Boiler Rules describes a hot water supply boiler which defines the second function of the dual unit as follows:

...[A] boiler completely filled with water that furnishes hot water to be used externally to itself at pressures not exceeding 160 psig or at temperatures not exceeding 250 degrees F at or near the boiler outlet.

As a result of the inspection, he classified the Polaris as a dual function hot water heating (for space heating) and supply (for water supply) boiler described under the two definitions above. He decided that the Polaris was exempt under paragraph 16(i) with regard to its hot water supply function, although during testimony he mistakenly referred to an exemption for "hot water heating boilers" on "page 16." (R. 17-18). It is clear from his reference to page 16 that he intended to allude to hot water supply boilers since hot water supply boilers are discussed on that page while hot water heating boilers are not. The exemption for hot water supply boilers including water heaters used for supply purposes is set out below:

[The following are exempt:] HOT WATER SUPPLY BOILERS, WATER HEATERS, INCLUDING LINED POTABLE WATER HEATER when none of the following limitations are exceeded:

- (1) a heat input of 200,000 Btu/hr.
- (2) a water temperature of 210 degrees F.
- (3) a water-containing capacity of 120 gallons.

Para. 16(i), Boiler Rules).

Although Parsell exempted the Polaris' unit as to its hot water supply function based on the above rule, as to its space heating function he classified it as a hot water heating boiler as defined in paragraph 6(j), Boiler Rules above. (R. 24-25).

Parsell's testimony and decision was supported by Charles Allison, a field representative of the National Board of Boiler and Pressure Vessel Inspectors. Allison stated that he (Allison) was an ASME designee whose duty was to see that manufacturers had a quality control system which was implemented in accordance with ASME standards. (R. 29). He had worked for the national board for ten years, and previously had been chief boiler inspector or acting commissioner for Tennessee. He had 34 years experience in the boiler field. (R. 29-30).

He further stated that he was a member of the American Society of Mechanical Engineers, and held both a national board commission and a nuclear endorsement. He testified that he was familiar with Utah boiler statutes, and that he classified the Polaris unit as a hot water heating boiler because of its space heating function. (R. 31).

Allison testified that the Polaris unit would have been accepted if it had the ASME stamp on it, and that the unit could have been built to ASME specifications. (R. 31).

To refute the testimony of the two experts who testified on behalf of the Commission, Mor-Flo introduced two witnesses. The first was Gary John Bosma, identified only as the vice president of "sales engineer products" for Mor-Flo with responsibilities for marketing, "working through product development," and some involvement of an unspecified nature in code issues in the U.S. and Canada. (R. 36) The second witness was Richard Hendricks who identified himself as being employed by Mountain Fuel Supply Company. (R. 63). Unfortunately, the record does not show any evidence of expertise, length of time in employment, training, or certification for either Bosma or Hendricks. (R. 36).

In the case of Richard Hendricks, there is absolutely nothing in the record which shows how Hendricks was employed by Mountain Fuel Supply Company. (R. 63-64). Thus, this Court must give less weight to the testimony of Mor-Flo's witnesses since they were merely witnesses, and not experts.

Supporting this view, it has been held that agency rulings will be closely scrutinized when the agency rejects the testimony of an expert and substitutes its own conclusions. See e.g. Davis & Randall, Inc. v. U.S., 219 F. Supp. 673

(W.D.N.Y. 1963). If Mor-Flo's witnesses were not qualified as experts on the record to answer the technical questions presented, this Court cannot supply the qualifications.

When the testimony of the Commission's expert witnesses who both had vast experience and training is weighed against the diminished credibility of Mor-Flo's witnesses, the evidence of record overwhelmingly supports the Order of the Commission. Thus, the Order of the Commission must be affirmed.

UNDER UTAH LAW, ANSI DOES NOT GOVERN THE CONSTRUCTION  
OF HOT WATER DEVICES THAT ARE USED TO PROVIDE  
BOTH POTABLE WATER AND SPACE HEATING IN LOCATIONS UNDER THE  
JURISDICTION OF THE INDUSTRIAL COMMISSION

Mor-Flo refers this Court to U.C.A. Sections 58-56-4 and 26-15-3 to support the proposition that the Uniform Plumbing Code (U.P.C.) governs the construction of water heaters used to provide both potable water and space heating. (PB Appendices F and G). Assuming for sake of argument that these sections do stand for the proposition espoused by Mor-Flo, the difficulty with its argument is that Section 58-56-4 was not the law at the time of the inspection (February 27, 1989), or at the time of the initial order to remove the noncomplying devices (March 9, 1989). Section 58-56-4 did not become effective until April 24, 1989, and neither amended or

replaced another section. Thus, Section 58-56-4 did not apply, and there is no former version of this section on which Mor-Flo can rely.

The remaining statute, Section 26-15-3, to which we are referred in Mor-Flo's brief at appendix G, was also not effective until April 24, 1989. The previous version which was effective during the February 27 through March 9, 1990 time period is shown below:

The department [of health] shall establish minimum rules for the design and installation of plumbing systems, fixtures and components used in the state. (U.C.A. Section 26-15-3).

There is no reference in the above section to the Uniform Plumbing Code. Since the statute in effect at the time did not reference the Uniform Plumbing Code, there could be no incorporation of ANSI by reference from the Uniform Plumbing Code. Therefore, the remaining information in Mor-Flo's brief about ANSI with reference to the instant argument is interesting, but neither relevant nor material.

The conclusion of Mor-Flo that the Order of the Commission was incorrect because the Utah Boiler Code was not applicable must fail because the statutes on which Mor-Flo relied were not in existence during the critical event dates. Even if the statutes cited by Mor-Flo had been effective during the inspection and notice period of this case, ANSI is a plumbing code administered by the department of health and was not applicable here since the Boiler Code required ASME to be

the governing standard. (R. 23). For these reasons, this Court should determine that the statutes cited by Mor-Flo were not applicable, and that the Order of the Industrial Commission should be affirmed.

POLARIS WATER HEATERS HAVE NOT BEEN SHOWN BY  
MOR-FLO TO BE EXEMPT UNDER THE CODE

Mor-Flo claims that the Polaris water heaters are exempt under the Code even when they provide space heating. Mor-Flo cites the Boiler Rules, Part II, Sect. 6(m) for the definition of water heater:

A closed vessel in which water is heated by the combustion of fuels, electricity, or any other source and withdrawn for use external to the system at pressures not exceeding 160 psig and shall include all controls and devices necessary to prevent water temperatures from exceeding 210 degrees F.

The additional element missing from the definition above which Mor-Flo impliedly argues would be surplusage is that of space heating. The definition relied upon by the Commission, and which is more descriptive of the Polaris hybrid device is that shown in Part II, Sect. 6(j) which follows:

Hot water heating boiler means a boiler in which no steam is generated, from which hot water is circulated for heating purposes and then returned to the boiler, and which operates at a pressure not exceeding 160 psig and/or [not exceeding] ...temperatures of 250 degrees F. at or near the boiler outlet. (Emphasis added).

This latter definition discusses the space heating function whereas the former definition does not.

The Polaris device has controls which if operating properly will not allow it to heat water above 210 degrees, but 210 degrees is still within the range designated in the latter definition. Although Mor-Flo contends that its system is not designed to boil water, it admits that if the controls failed that water would boil. (R. 46).

Mor-Flo contends that the Polaris "satisfies each and every requirement for a water heater under the Utah Boiler Code." (PB p. 22) It then cites the ASME Code which it claims clearly and unambiguously provides criteria for distinguishing between a hot water heating boiler and a water heater. Its reliance on Part HLW of the ASME Code for this proposition is misplaced. The pertinent part not discussed by Mor-Flo states:

\* \* \* \*

Part HLW does not apply to residential size water heaters which are excluded by provisions of HLW-101 and hot water heating boilers. INTRODUCTION to Part HLW, ASME Code (1988 Addenda).

Since the Polaris devices were residential size space heating devices (R. 32), it is not appropriate to conclude that the criteria discussed applied to devices in this case especially since the explicit language stated in Part HLW says that this part does not apply. For purpose of argument, if it

is assumed that the criteria distinguishing water heaters and hot water heating boilers apply to this case, HLW-101 nevertheless sets forth a requirement that water heaters which are otherwise exempted from Part HLW "shall be equipped with safety devices in accordance with the requirements of HLW-800." Id. at Part HLW-101. HLW-800 requires certain safety devices which are ASME marked. Id. at Part HLW-800. Although Mor-Flo has argued that their water heaters are exempt from all ASME requirements, HLW-101 states otherwise. (R. 52).

THE ARGUMENT THAT NO OTHER STATE HAS IMPOSED THE  
ASME CONSTRUCTION REQUIREMENTS ON THE POLARIS IS  
NOT SUPPORTED BY THE RECORD

Mor-Flo argues that "[a]n examination of the states throughout the United States shows that Utah stands alone in its interpretation of the ASME Code." (PB. 30). It further contends that none of the states which have adopted the ASME have imposed the construction requirements of the ASME Code on the Polaris when it is used for space heating, and that Utah is thus unique. (PB. 31).

To support this argument, Mor-Flo refers this Court to the record at pages 48-49. On these pages, Gary John Bosma, vice president of sales for Mor-Flo, is testifying in response to questions by the Mor-Flo attorney. A close reading of these pages shows that factual support for the argument is lacking. Pertinent portions are extracted below:



\* \* \* \*

Q. Where do we sell these systems?

A. . . . . [I]n 48 states and Canada. . . .

\* \* \* \*

Q. And most of these 48 states are ASME code states  
is that correct?

A. I know of none that are not ASME code states. Now  
in some states the code is not enforced, but I  
know of no state that is not an ASME state.

\* \* \* \*

Q. So there is no other state today that is calling  
us a boiler other than Utah?

A. I am aware of no state today which does not allow  
this because of ASME other than Utah. (Emphasis  
added) (R. 48-49).

The most that can be deduced from the answers of  
Mor-Flo's witness is that he did not know how many of the 48  
states applied the ASME Code in a similar manner to Utah, but  
that he thought that all did. Further, he was not aware of any  
that applied the Code in the same fashion, but he did not know  
for sure. These answers do not approach the level of certainty  
espoused by the argument. For this reason, the argument must  
be rejected.

THE INDUSTRIAL COMMISSION'S INTERPRETATION  
IS CONSISTENT WITH INTERPRETATIONS MADE BY ASME

Mor-Flo states that Bosma (Mor-Flo's vice president), and Parsell (director of the Safety Division of the Industrial Commission) attended a meeting of the ASME in Tulsa, Oklahoma in which "the ASME did not agree that a water heater becomes a boiler when it is used for space heating." (R. 46-47).

According to the record, the ASME never answered the question. Bosma explained, "The inquiry, as we made it, was to ask ASME to once and for all define the issue, ... and we [Bosma and Parsell] talked afterwards ... [and] we were equally frustrated in that ASME opted not to answer the question." (R. 47).

This statement shows that according to the Mor-Flo vice president no interpretation was given by ASME at that meeting indicating that the system was or was not a boiler. Otherwise, why would both the representative of the Industrial Commission and the representative of Mor-Flo be "equally frustrated" according to this statement? At most this statement is a neutral one which does not support Mor-Flo's argument.

Follow-on questions by Mor-Flo's counsel also failed to support Mor-Flo's argument.

\* \* \* \*

Q. Did ASME say our system was a boiler?

A. No.

Q. So Mr. Parsell's claim that we are a boiler is not consistent with ASME interpretation that was provided?

A. Right. (R.47)

\* \* \* \*

It would be more correct to conclude that the ASME made no statement at this meeting on the question presented, and that the Industrial Commission's decision was not affected. Thus, Bosma's testimony in this instance does not support the allegation that the Commission's interpretation was at variance with the ASME.

The second prong of the argument by Mor-Flo is to the effect that a "water heater that uses an optional recirculation loop continues to be a water heater and is not required to be constructed as a boiler in accordance with the ASME Code." (PB 31). Mor-Flo contends that such a recirculation loop is "almost identical" to the Polaris construction when used for space heating except that space heating requires a fan to blow air over the Polaris piping. (Id.). By the admission of Mor-Flo's own witness, the recirculation loop alluded to is not a loop for space heating.

To support this contention, Mor-Flo entered a letter from the ASME which it alleges answered the question about whether the Polaris device was required to be constructed in accord with ASME requirements. The letter did not ask a question about a space heating loop, but asked the following:

If a water heater is installed with an optional recirculating line that returns heated water to a water heater as illustrated in Figs. HLW-809.1 and Fig. HLW-809.2, would it then be required to be H-Stamped? (Trial Exhibit R-2).

The reply by the assistant secretary, Boiler and Pressure Vessel Committee, was a simple "No." There are two problems with this question, one, the question does not deal with a loop for space heating, and two, devices which properly fall under the domain of the "HLW" section would never receive an "H" stamp since only devices meeting the requirements of the "HG" section would receive an "H" stamp. (Section HG-533.5, ASME Code (1986 with 1988 Addenda).

The above referenced letter to the ASME asked a similarly faulty question:

Do restrictions of Part HG as defined in HG-100 Scope and HG-101.2 Service Restrictions (b) apply to Part HLW? (Trial Exhibit R-2).

Again, the response by the ASME was a simple "No." The services specified in HG-101.2 show the following:

1. Pressures exceeding 160 p.s.i.
2. Temperatures exceeding 250 degrees F.

Thus, the question asked and the answer given do not support the argument of Mor-Flo. The two services specified in the above enumeration exceed the requirements of Section 6(j) of the Boiler Rules, and the Commission has never argued that Mor-Flo should exceed the requirements emanating from the definition of Section 6(j). (R. 24). Section 6(j) states:

Hot Water Heating Boiler means a boiler in which no steam is generated, from which hot water is circulated for heating purposes and then returned to the boiler, and which operates at a pressure not exceeding 160 psig and/or at temperatures of 250 degrees F. at or near the boiler outlet. (Section 6(j), Boiler Rules; (R. 24, 30-31).

For the above reasons, Mor-Flo has failed to show that the Commission's interpretation is contrary to the interpretations of the ASME. To the contrary, the Commission's interpretation is consistent with statutes and the Boiler Rules, and the ASME Code. In the words of the ASME Code:

The objective of the rules is to afford reasonably certain protection of life and property and to provide a margin for deterioration in service so as to give a reasonably long, safe period of usefulness. Foreword, ASME Code (1986).

Testimony by Parsell of the Safety Division showed that the concern of the Commission was with safety, and when the devices are built under the ASME Code, the Commission could

be sure that these units installed in Utah are safe in terms of such components as material and construction. (R. 25).

#### CONCLUSION

For the reasons set forth above, the Industrial Commission respectfully requests this Court to affirm the Industrial Commission's Order Denying Review and the Findings of Fact, Conclusions of Law, and Order of the Administrative Law Judge of the Industrial Commission.

Respectfully submitted,



BENJAMIN A. SIMS  
INDUSTRIAL COMMISSION OF UTAH  
160 East 300 South  
Third Floor  
Salt Lake City, Utah 84111

Attorney for Respondent

#### CERTIFICATE OF SERVICE

I hereby certify that on the 5<sup>th</sup> day of March, 1991, I caused the foregoing BRIEF OF RESPONDENTS to be served by prepaid first class postage on:

A. ROBERT THORUP  
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RICHARD S. MITCHELL  
GOODMAN WEISS FREEDMAN  
100 Erieview Plaza; 27th Flr  
Cleveland, OH 44114-1824



BENJAMIN A. SIMS

## **APPENDIX AA**

THE INDUSTRIAL COMMISSION OF UTAH

Case No. S-B 89-1

INDUSTRIAL COMMISSION OF UTAH  
BY AND THROUGH  
THE SAFETY DIVISION,

Charging Party,

vs.

POLARIS WATER HEATERS/  
ARLINGTON PLACE,

Respondent.

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FINDINGS OF FACT

CONCLUSIONS OF LAW

AND ORDER

\*\*\*\*\*

HEARING: Hearing Room 334, Industrial Commission of Utah, 160 East 300 South, Salt Lake City, Utah, on March 22, 1990, at 8:30 o'clock a.m.. Said hearing was pursuant to Order and Notice of the Commission.

BEFORE: Janet L. Moffitt, Administrative Law Judge.

APPEARANCES: The Charging Party was represented by Donald George, Attorney at Law.

The Respondents, Polaris Water Heaters, were represented by Richard S. Mitchell, Attorney at Law.

The issue to be addressed in this matter is whether the units in question produced by the respondent, Polaris Water Heaters, are brought by definition within the jurisdiction of the charging party, Safety Division of the Industrial Commission of Utah.

FINDINGS OF FACT AND DISCUSSION:

The units at issue in this matter are produced by Polaris Water Heaters and Mor-flo. They are comprised of a water heating unit which has an external unit through which the heated water is pumped and is used for space heating. The water heating unit has controls on it which preclude heating beyond 210 degrees Fahrenheit. The units in question have not been approved by ASME, American Society of Mechanical Engineers. Several of the units were installed in a multi-family condominium facility, Arlington Place, at 100 South 1100 East, in Salt Lake City, Utah.

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Polaris Water Heaters  
Order  
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On February 27, 1989, the units were inspected by a representative of the Safety Division and were found not to be registered by ASME. On March 9, 1989, and again on August 30, 1989, the Division issued an Order for the removal of the units inasmuch as they did not comply with the regulations adopted by the Division which required an ASME certification.

The respondents have appealed that Order alleging that the unit is a water heater and, thus, exempt from jurisdiction of the Division pursuant to Part II, Section 16 of the Boiler and Pressure Vessel Rules and Regulations, which provides for exemption of hot water supply boilers and water heaters which do not exceed a capacity of 120 gallons or heat water beyond 210 degrees.

The charging party asserts that the units in question should be classified as a hot water heating boiler, a vessel clearly within the jurisdiction of the Division, even though the temperatures in the units in question do not exceed 210 degrees. The Division bases their decision on the fact that the units serve not only as water heaters but also as space heaters, thus focusing on entire function, as opposed to a portion of the function. The respondents also point out that Part I, Section 6, defines a hot water heating boiler as a unit from which hot water circulated for heating purposes and operates at temperatures not exceeding 250 degrees. It is their belief that the fact that the unit manufactured by the respondents falls within this definition and that the 250 degrees cited in the definition applies to any vessel which heats water under that temperature and is used for dual purposes.

After an examination of the statements, briefs and testimony submitted in this matter, the Administrative Law Judge is of the opinion that the charging party has presented the most favorable position. In examining all of the materials, the Administrative Law Judge is convinced that the intent behind the Rules and, in fact, the charge of the Legislature to the Division is to provide for a regular inspection of devices for heating in multi-family dwellings and public buildings. The fact that the device in question is also used for other purposes (in this case heating water) does not remove it from the jurisdiction of the Safety Division.

The Safety Division has adopted as a standard that all such devices, in order to be acceptable, must meet the standards of the American Society of Mechanical Engineers. Although such a standard may be somewhat confining, it cannot be considered unreasonable or arbitrary. It seems to the Administrative Law Judge that the regulations are deficient in not providing for a situation where there may be some variance allowed from the ASME standard after appropriate investigation by the Division. However, that is outside the purview of the matter presently before us. The units in question have not been approved by ASME for reasons which were not presented at the hearing. It would appear to the Administrative Law Judge that the respondents may either take the course of getting appropriate approval for their units by ASME or work towards

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Polaris Water Heaters  
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changing legislatively the standards utilized by the Division. It is not appropriate to try to circumvent the intent of the Legislature to provide for the safety of the public by trying to create a definitional exception and remove the units from jurisdiction of the Division.

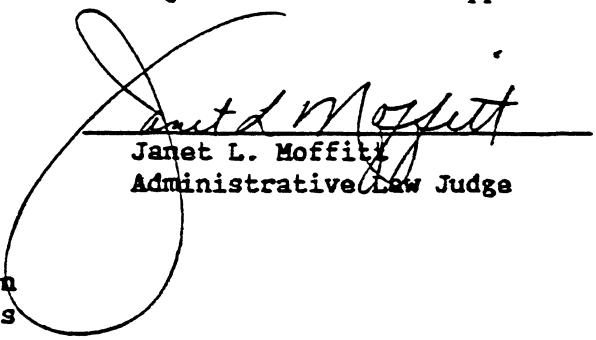
CONCLUSIONS OF LAW:

The Polaris units manufactured by the respondents, Mor-Flo/American Comfort Systems, have been found to be within the jurisdiction of the Safety Division of the Industrial Commission of Utah and must be removed from the placings in question at the Arlington Place condominiums for reason of failing to meet the standards as outlined in the Rules and Regulations adopted by the Division.

ORDER:

IT IS THEREFORE ORDERED that the Order for Removal issued by the Safety Division on August 30, 1989, of the Polaris Water Heater units at Arlington Place, be enforced.

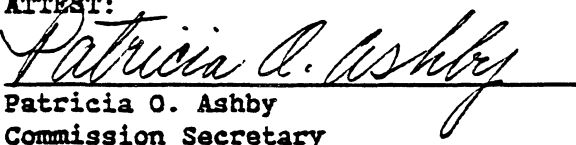
IT IS FURTHER ORDERED that any Motion for Review of the foregoing shall be filed in writing within thirty (30) days of the date hereof, specifying in detail the particular errors and objections, and, unless so filed, this Order shall be final and not subject to review or appeal.

  
Janet L. Moffitt  
Administrative Law Judge

Passed by the Industrial Commission  
of Utah, Salt Lake City, Utah, this

4th  
day of May, 1990.

ATTEST:

  
Patricia O. Ashby  
Commission Secretary

CERTIFICATE OF MAILING

I certify that on May 4<sup>th</sup>, 1990, a copy of the attached Findings of Fact, Conclusions of Law and Order, in the case of Industrial Commission By and Through Safety Division vs. Polaris Water Heaters, was mailed to the following persons at the following addresses, postage paid:

James Parsell, Director, Safety Division, Industrial Commission of Utah

Donald George, Atty., Industrial Commission of Utah

Richard S. Mitchell, Atty., 100 Erieview Plaza, 27th Floor, Cleveland, OH 4414-1824

THE INDUSTRIAL COMMISSION OF UTAH

By Wilma Burrows  
Wilma Burrows

## **APPENDIX BB**

THE INDUSTRIAL COMMISSION OF UTAH

Case No. S-B 89-1

INDUSTRIAL COMMISSION OF UTAH  
BY AND THROUGH THE SAFETY DIVISION,

Charging Party,

v.

POLARIS WATER HEATERS/ARLINGTON PLACE,

Respondent.

ORDER DENYING MOTION FOR REVIEW

\*\*\*\*\*

The Industrial Commission of Utah on Motion of Respondent Polaris Water Heaters reviews the Order of the Administrative Law Judge in the above-entitled matter dated May 4, 1990, pursuant to Utah Code Ann. Sections 35-1-82.53(1) and 63-46b-12.

On February 27, 1989, a Safety Division representative discovered two dual-purpose water heater/space heating units in use at Defendant Arlington Place's multi-family condominium facility. The units were not certified by the American Society of Mechanical Engineers ("ASME") as required by the Division's regulations for hot water heating boilers. The Division ordered the units out of service, and Respondent Polaris Water Heaters ("Polaris") appealed. On May 4, 1990, an Administrative Law Judge of the Commission issued Findings of Fact, Conclusions of Law, and Order holding the units subject to the Division's jurisdiction and ordering their removal from service. The manufacturer of the units, Mor-Flo Industries, Inc. ("Mor-Flo"), has appealed the Order on the ground that the device as designed is exempt from the Division's regulations promulgated pursuant to the Utah Code. The Commission does not agree.

The scope of Utah's Boiler inspection law, Utah Code Ann. Sections 35-7-5 et seq., is established by Section 35-7-5, applying the chapter "to all boilers or pressure vessels used in industrial or manufacturing establishments, business establishments, sawmills, construction jobs, and every place where workers or the public may be exposed to risks from the operation of boilers or pressure vessels." Subsection d of that provision provides an exemption for "[b]oilers and pressure vessels which are excluded

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ORDER  
PAGE TWO

from the Boiler and Pressure Vessel Code published by the American Society of Mechanical Engineers." Respondent has pointed to no ASME exemption for its device.


The Division's Boiler and Pressure Vessel Rules and Regulations, Revision 3 (effective May 31, 1988), are applicable here. Part I, Rule 6, Subsection (j) defines a hot water heating boiler as "a boiler in which no steam is generated, from which hot water is circulated for heating purposes and then returned to the boiler, and which operates at a pressure not exceeding 160 psig and/or at temperature of 250 degrees F. at or near the boiler outlet." Under Subsection (m) of the rule, "WATER HEATER means a closed vessel in which water is heated by the combustion of fuels, electricity or any other sources and withdrawn for use external to the system at pressures not exceeding 160 psig and shall include all controls and devices necessary to prevent water temperatures from exceeding 210 degrees F." Respondent contends that because its device meets all criteria for water heaters, its additional space heating function should not require its classification as a hot water heating boiler. The record clearly demonstrates, and Respondent does not contest, that Respondent's device is a functional hybrid. Besides supplying hot water, it is designed to provide heat to raise the air temperature of an enclosed space. While a water heater, by definition, provides hot water "withdrawn for use external to the system" (Subsection (m)), a hot water heating boiler circulates hot water "for heating purposes" (Subsection (j)). This functionally based categorization subjects a dual-function device to regulation for each function it fulfills. As the Administrative Law Judge properly found, the Division is within its statutory authority to require heating devices in multi-family dwellings to meet ASME standards, a regulation that is neither unreasonable nor arbitrary. The Commission emphasizes that meeting ASME standards guarantees a measure of safety that it is the Division's mandate to assure. As was also pointed out in the Order, Respondent can earn Division acceptance of its device by either obtaining ASME approval or working toward legislative change of the Division's statutorily prescribed standards. However, until those standards are met or changed, the Commission agrees that Respondent's non-complying devices must be removed from service.

ORDER:

IT IS THEREFORE ORDERED that the May 4, 1990, Order of the Administrative Law Judge enforcing the Division's Order for Removal is hereby affirmed and Respondent's Motion for Review is hereby denied.

INDUSTRIAL COMM'N v. POLARIS WATER HEATERS  
ORDER  
PAGE THREE

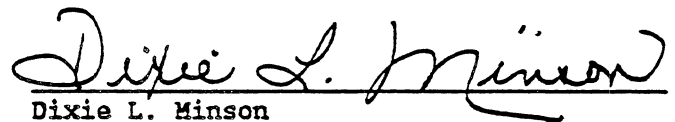
Any appeal shall be to the Utah Court of Appeals within thirty (30) days of the date hereof, pursuant to Utah Code Ann. Sections 35-1-82.53(2), 35-1-86, and 63-46b-16. Industrial Commission costs to prepare a transcript of the hearing for appeals purposes shall be borne by the appellant.



Stephen M. Hadley  
Chairman



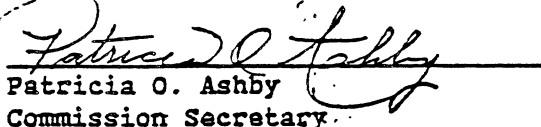
Thomas R. Carlson  
Commissioner



Dixie L. Minson  
Commissioner

Passed by the Industrial Commission  
of Utah, Salt Lake City, Utah, this  
22nd day of August, 1990.

ATTEST:

  
Patricia O. Ashby  
Commission Secretary

CERTIFICATE OF MAILING

I certify that on August 27, 1990, a copy of the attached Order Denying Motion for Review in the case of Industrial Commission v. Polaris Water Heaters was mailed to the following persons at the following addresses, postage paid:

James Parsell, Director, Safety Division, Industrial Commission of Utah

James E. Harward, Attorney, Industrial Commission of Utah

Richard S. Mitchell, Attorney, 100 Erieview Plaza, 27th Floor, Cleveland, Ohio 44114-1824

THE INDUSTRIAL COMMISSION OF UTAH

By Adell Butler Mitchell  
Adell Butler-Mitchell



## **APPENDIX CC**



Norman H. Bangert  
Governor

James C. Parsell  
Director

State of Utah  
INDUSTRIAL COMMISSION OF UTAH  
SAFETY DIVISION

160 East 300 South  
P.O. Box 510910  
Salt Lake City, Utah 84151-0910  
801-530-6869  
Toll Free 1-800-426-0667

Stephen M. Hadley  
Chairman  
John Flores  
Commissioner  
Thomas R. Carlson  
Commissioner

March 9, 1989

Tami D. Simon  
Property Manager  
Arlington Place  
100 South 1100 East  
Salt Lake City, UT 84102

COPY

RE: Polaris Water Heaters

Dear Ms. Simon:

On February 27, 1989, Mr. Bill Jones and myself inspected two polaris water heaters at Arlington Place. It was observed that these units were being used for potable water (hot water service) and hot water heating of the building.

These units are acceptable for potable water but not for heating of the building. Boilers used for heating must be built according to ASME (American Society of Mechanical Engineers) code and be National Board registered. This requirement is Part II, article A & B of the State of Utah Boiler and Pressure Vessels Rules and Regulations.

It is necessary at this time to order these units out of service for heating of the building. A boiler that meets the State of Utah requirements, ASME/NB, shall be used for this purpose.

Please contact our office, at 530-6869, when these items are complete. Your prompt attention to these requirements is requested, as a reinspection will be made in 30 days.

If this office can be of any assistance, please contact us again.

Sincerely,

  
James C. Parsell  
Safety Director

JCP/ns

bcc: Bob Bowles, 2391 E 6475 So, SLC 84121

## **APPENDIX DD**



Norman H. Hangerter  
Governor  
James C. Farrell  
Director

# State of Utah

## INDUSTRIAL COMMISSION OF UTAH SAFETY DIVISION

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Stephen M. Hadley  
Chairman  
John Flores  
Commissioner  
Thomas R. Carlson  
Commissioner

August 30, 1989

Tami D. Simon, Property Manager  
Arlington Place  
100 South 1100 East  
Salt Lake City, UT 84102


RE: Polaris Water Heaters

Dear Ms. Simon:

This is to inform you that a final decision has been reached regarding the units referenced above. It is the decision of the Safety Division, Boiler Section, that these units must be removed from service. These units are hereby ordered out-of-service within 30 days of the date of this letter.

If there is disagreement with the reasonableness of the above-stated prerequisites to obtaining a permit, a hearing may be requested per U.C.A. 35-1-22. Per Rule 488-201-9, requests for hearing must comply with the requirements of U.C.A. 63-46b-3(3)(a) and U.C.A. 35-1-23 and must be received by the Industrial Commission within 30 days of the date of this letter. A copy of the Industrial Commission boiler inspection agency rules can be obtained from the Industrial Commission Safety Division.

Sincerely,

  
James C. Farrell  
Safety Director

JCP/ns

EXHIBIT A

D

## **ADDENDUM A**

## **CHAPTER 69**

H. B. No. 158

(Passed March 9, 1967. In effect May 9, 1967)

### **BOILER INSPECTION LAW**

**An Act Providing for the Safe Construction, Installation, Repair, Use and Operation of Boilers and Pressure Vessels, Except Those Under Federal Control and Certain Others; Providing for Inspection of Boilers, Inspection Fees to be Charged, and Enforcement of Safety Rules and Regulations Adopted by Industrial Commission Who Shall Administer Act and Have Supervision Thereof; Providing Penalties for Violation of Act; Repealing Sections 35-7-1, 35-7-2, 35-7-3 and 35-7-4, Utah Code Annotated 1953 and Substituting in Lieu Thereof This Act.**

# CHAPTER 7

## BOILER INSPECTION LAW

**Sunset Act.** — Section 63-55-7 provides that Title 35 terminates on July 1, 1995.

Section	Section
35-7-1 to 35-7-4. Repealed.	Inspection certificate — Suspension of inspection certificate —
35-7-5. Scope of act — Exemptions.	Duration — Standards of commission inspectors.
35-7-6. Standards for construction and design — Special approved designs — Maintenance requirements.	35-7-8. Fees.
35-7-7. Annual inspection requirement — Inspection intervals, maximum — Insurance company inspections —	35-7-9. Violation of act — Misdemeanor — Penalty.

### 35-7-1 to 35-7-4. Repealed.

**Repeals.** — Sections 35-7-1 to 35-7-4 (L. 1945, ch. 72, §§ 1 to 4, C 1943, Supp., 42-7-1 to 42-7-4), relating to boiler inspection, were repealed by Laws 1967, ch. 69, § 6. For present provisions, see 35-7-5 et seq.

### 35-7-5. Scope of act — Exemptions.

This act shall, except as otherwise provided herein, cover all boilers and pressure vessels used in industrial or manufacturing establishments, business establishments, sawmills, construction jobs and every place where workmen or the public may be exposed to the risks thereof. This act shall not apply to:

- a. Boilers subject to inspection, control or regulation under or pursuant to the terms of any law or regulation of the U.S. Government or any of its agencies.
- b. Air tanks located on vehicles used for transporting passengers or freight.
- c. Pressure vessels operated entirely full of water or other liquid which is not materially more hazardous than water, provided the temperature of the vessel contents does not exceed 150° F.
- d. Water heater tanks of the type commonly known as domestic water heaters.
- e. Pressure vessels meeting the requirements of the Interstate Commerce Commission for shipment of liquids or gases under pressure.
- f. Boilers and pressure vessels which are excluded from the Boiler and Pressure Vessel Code published by the American Society of Mechanical Engineers.

**History:** L. 1967, ch. 69, § 1. 1967, Chapter 69, which appears as §§ 35-7-5 to 35-7-9.

**Meaning of "this act".** — The term "this act", referred to in this section, means Laws

### **35-7-6. Standards for construction and design — Special approved designs — Maintenance requirements.**

For the purposes of this act the standards for the design and construction of new boilers and new pressure vessels shall be the latest applicable provisions of the Boiler and Pressure Vessel Code published by the American Society of Mechanical Engineers. This act shall not be construed as preventing the construction and use of boilers or pressure vessels of special design, subject to approval of the Utah Industrial Commission, provided such special design provides a level of safety equivalent to that contemplated by the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers. Boiler and pressure vessels, including existing boilers and pressure vessels, shall be maintained in safe operating condition for the service involved.

History: L. 1967, ch. 69, § 2.

Meaning of "this act". — See same catchline in notes following § 35-7-5.

#### **COLLATERAL REFERENCES**

Am. Jur. 2d. — 26 Am. Jur. 2d Electricity, Gas, and Steam § 17.

C.J.S. — 82 C.J.S. Steam § 12.  
Key Numbers. — Steam ☞ 1.

### **35-7-7. Annual inspection requirement — Inspection intervals, maximum — Insurance company inspections — Inspection certificate — Suspension of inspection certificate — Duration — Standards of commission inspectors.**

On and after July 1, 1967, each boiler used or proposed to be used within this state, except boilers exempt under Section 35-7-5, shall be thoroughly inspected internally and externally, annually (except as otherwise herein provided), while not under pressure, by the industrial commission or by inspectors approved and deputized by said commission as to its safety of construction, installation, condition, and operation. If at any time a hydrostatic test shall be deemed necessary by the industrial commission to determine the safety of a boiler, the same shall be made at the direction of the commission, allowing a reasonable time for owner or user to comply. Not more than fourteen months shall elapse between internal inspections of boilers, except not more than thirty months between internal inspections of large power boilers (those operated and monitored continuously with adequate maintenance, combustion, and water controls). The industrial commission may extend the inspection interval in writing when proper evidence has been presented as to method of operation, performance records and water treatment. All low pressure boilers (steam fifteen pounds per square inch pressure and water sixty pounds per square inch pressure, maximum) shall be internally and exter-



nally inspected at least biennially where construction will permit. Boilers inspected by deputized inspectors employed by insurance companies, if made within the time limits herein provided, shall be considered to meet the provisions of this act if reports of such inspections are filed with the Industrial Commission within thirty days after such inspection, and if such boilers are certified by such inspectors employed by insurance companies as being safe to operate for the purpose for which they are being used; and such inspection and filing of such report with the Industrial Commission shall exempt such boiler or boilers from inspection fees herein provided.

If a boiler shall, upon inspection, be found to be suitable and to conform to the rules and regulations of the Industrial Commission, the inspector shall issue to such owner or user an inspection certificate.

The Industrial Commission may at any time suspend an inspection certificate when in its opinion the boiler for which it was issued may not continue to be operated without menace to the public safety or when the boiler is found not to comply with the safety rules of the commission. Such suspension of an inspection certificate shall continue in effect until such boiler shall have been made to conform to the safety rules of the Industrial Commission and a new certificate is issued.

Inspectors deputized or employed by the Industrial Commission under this act shall meet at all times nationally recognized standards of qualifications of fitness and competence for such work.

History: L. 1967, ch. 69, § 3.

#### COLLATERAL REFERENCES

Am. Jur. 2d. — 26 Am. Jur. 2d Electricity,  
Gas, and Steam § 17.

C.J.S. — 82 C.J.S. Steam § 14.  
Key Numbers. — Steam, ¶ 4.

### 35-7-8. Fees.

The owner or user of a boiler required by this chapter to be inspected shall pay to the secretary of the Industrial Commission fees for inspection or for permits to operate in amounts set by the Industrial Commission pursuant to Subsection 63-38-3(2). The secretary of the Industrial Commission shall pay all sums so received to the state treasurer.

History: L. 1967, ch. 69, § 4; 1981, ch. 15,  
§ 1; 1984 (2nd S.S.), ch. 15, § 46.

Amendment Notes. — The 1984 (2nd S.S.)  
amendment substituted "chapter" for "act" in  
the first sentence; added "pursuant to Subsec-

tion 63-38-3(2)" to the first sentence; deleted a  
second sentence which read: "Such fees shall  
not exceed \$100 per boiler"; and made minor  
changes in phraseology.

**35-7-9. Violation of act — Misdemeanor — Penalty.**

On and after July 1, 1967, it shall be unlawful for any person, firm, partnership or corporation to operate a boiler or pressure vessel to which this act applies in violation of this act. Such violation shall constitute a misdemeanor on the part of the owner, user or operator thereof, and be punishable for a fine not exceeding \$100 or imprisonment not to exceed ninety days or both, at the discretion of the court.

History: L. 1967, ch. 69, § 5.

Meaning of "this act". — See same catchline in notes following § 35-7-5.

## **ADDENDUM B**

ASME BOILER AND PRESSURE VESSEL CODE  
AN AMERICAN NATIONAL STANDARD

# SECTION IV

## Rules for Construction of Heating Boilers

1986 EDITION

JULY 1, 1986



ASME BOILER AND PRESSURE VESSEL COMMITTEE  
SUBCOMMITTEE ON HEATING BOILERS

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS  
United Engineering Center      345 East 47th Street      New York, N.Y. 10017

Date of Issue — July 1, 1986  
(Includes all Addenda dated December 1985 and earlier)

This code or standard was developed under procedures accredited as meeting the criteria for American National Standards. The Consensus Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment which provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not "approve," "rate," or "endorse" any item, construction, proprietary device, or activity

ASME does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this document, and does not undertake to insure anyone utilizing a standard against liability for infringement of any applicable Letters Patent, nor assume any such liability. Users of a code or standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

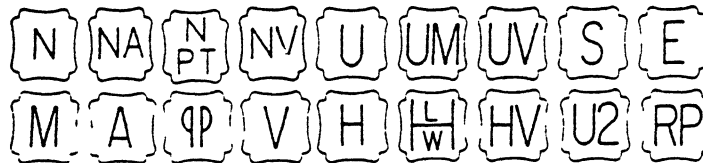
Participation by federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of this code or standard.

ASME accepts responsibility for only those interpretations issued in accordance with governing ASME procedures and policies which preclude the issuance of interpretations by individual volunteers.

The footnotes in this document are part of this American National Standard.



ASME collective membership mark



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Revised 1940, 1941, 1943, 1946, 1949 1952, 1953, 1956, 1959, 1962, 1965, 1968, 1971, 1974, 1977, 1980, 1983, 1986

# 1986 ASME

## BOILER AND PRESSURE VESSEL CODE

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- II Material Specifications
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  - Part B — Nonferrous Materials
  - Part C — Welding Rods, Electrodes and Filler Metals
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- III Division 1
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### ADDENDA

Colored-sheet Addenda, which include additions and revisions to individual Sections of the Code, are published annually and will be sent automatically to purchasers of the applicable Sections up to the publication of the 1989 Code. The 1986 Code is available only in the loose-leaf format; accordingly, the Addenda will be issued in the loose-leaf, replacement-page format.

### INTERPRETATIONS

ASME issues written replies to inquiries concerning interpretation of technical aspects of the Code. The Interpretations for each individual Section will be published separately and will be included as part of the update service to that Section. They will be issued semiannually (July and December) up to the publication of the 1989 Code. Interpretations of Section III, Divisions 1 and 2, will be included with the update service to Subsection NCA. Interpretations are not part of the Code or the Addenda.

### CODE CASES

The Boiler and Pressure Vessel Committee meets regularly to consider proposed additions and revisions to the Code and to formulate Cases to clarify the intent of existing requirements or provide, when the need is urgent, rules for materials or constructions not covered by existing Code rules. Those Cases which have been adopted will appear in the appropriate 1986 Code Cases book. (1) Boilers and Pressure Vessels and (2) Nuclear Components. Supplements will be sent automatically to the purchasers of the Code Cases books up to the publication of the 1989 Code.

## FOREWORD

The American Society of Mechanical Engineers set up a committee in 1911 for the purpose of formulating standard rules for the construction of steam boilers and other pressure vessels. This committee is now called the Boiler and Pressure Vessel Committee.

The Committee's function is to establish rules of safety governing the design, fabrication, and inspection during construction of boilers and pressure vessels, and to interpret these rules when questions arise regarding their intent. In formulating the rules, the Committee considers the needs of users, manufacturers, and inspectors of pressure vessels. The objective of the rules is to afford reasonably certain protection of life and property and to provide a margin for deterioration in service so as to give a reasonably long, safe period of usefulness. Advancements in design and material and the evidence of experience have been recognized.

The Boiler and Pressure Vessel Committee deals with the care and inspection of boilers and pressure vessels in service only to the extent of providing suggested rules of good practice as an aid to owners and their inspectors.

The rules established by the Committee are not to be interpreted as approving, recommending, or endorsing any proprietary or specific design or as limiting in any way the manufacturer's freedom to choose any method of design or any form of construction that conforms to the Code rules.

The Boiler and Pressure Vessel Committee meets regularly to consider revisions of the rules, new rules as dictated by technological development, Code Cases, and requests for interpretations. Requests for interpretation must be addressed to the Secretary in writing and must give full particulars in order to receive consideration and a written interpretation (see Mandatory Appendix covering preparation of technical inquiries). Proposed revisions to the Code resulting from inquiries will be presented to the Main Committee for appropriate action. The action of the Main Committee becomes effective only after confirmation by letter ballot of the Committee and approval by ASME.

Proposed revisions to the Code approved by the Committee are submitted to the American National Standards Institute and published in *Mechanical Engineering* to invite comments from all interested persons. After the allotted time for public review and final approval by ASME, revisions are published annually in Addenda to the Code.

Code Cases may be used in the construction of components to be stamped with the ASME Code symbol beginning with the date of their approval by ASME.

After Code revisions are approved by ASME, they may be used beginning with the date of issuance shown on the Addenda. Revisions become mandatory as minimum requirements six months after such date of issuance, except for boilers or pressure vessels contracted for prior to the end of the six-month period.

Manufacturers and users of components are cautioned against making use of revisions and Cases that are less restrictive than former requirements without having assurance that they have been accepted by the proper authorities in the jurisdiction where the component is to be installed.

Each state and municipality in the United States and each province in the Dominion of Canada that adopts or accepts one or more Sections of the Boiler and Pressure Vessel Code is invited to appoint a representative to act on the Conference Committee to the Boiler and Pressure Vessel Committee. Since the members of the Conference Committee are in active contact with the administration and enforcement of the rules, the requirements for inspection in this Code correspond with those in effect in their respective jurisdictions. The required qualifications for an Authorized Inspector or an Authorized Nuclear Inspector under these rules may be obtained from the administrative authority of any state, municipality, or province which has adopted these rules.

The Boiler and Pressure Vessel Committee in the formulation of its rules and in the establishment of maximum design and operating pressures considers materials, construction, methods of fabrication, in-

spection, and safety devices. Permission may be granted to regulatory bodies and organizations publishing safety standards to use a complete Section of the Code by reference. If usage of a Section, such as Section IX, involves exceptions, omissions, or changes in provisions, the intent of the Code might not be attained.

Where a state or other regulatory body, in the printing of any Section of the Boiler and Pressure Vessel Code, makes additions or omissions, it is recommended that such changes be clearly indicated.

The National Board of Boiler and Pressure Vessel Inspectors is composed of chief inspectors of states and municipalities in the United States and of provinces in the Dominion of Canada that have adopted the Boiler and Pressure Vessel Code. This Board, since its organization in 1919, has functioned to uniformly administer and enforce the rules of the Boiler and Pressure Vessel Code. The cooperation of that organization with the Boiler and Pressure Vessel Committee has been extremely helpful.

It should be pointed out that the state or municipality where the Boiler and Pressure Vessel Code has been made effective has definite jurisdiction over any particular installation. Inquiries dealing with problems of local character should be directed to the proper authority of such state or municipality. Such authority may, if there is any question or doubt as to the proper interpretation, refer the question to the Boiler and Pressure Vessel Committee.

The Specifications for base materials given in Section II, Parts A and B, are identical with or similar to those of The American Society for Testing and Materials. When reference is made in an ASME Material Specification to an ASTM Specification for which a companion ASME Specification exists, the reference shall be interpreted as applying to the ASME Material Specification. Specifications for welding materials given in Section II, Part C, are identical

with or similar to those of the American Welding Society. Not all materials included in the ASME Material Specifications in Section II have been adopted for Code use. Usage is limited to those materials and grades adopted by at least one of the other Sections of the Code for application under rules of that Section. All materials allowed by these various Sections and used for construction within the scope of their rules shall be furnished in accordance with ASME Material Specifications contained in Section II except where otherwise provided in Code Cases or in the applicable Section of the Code. Materials covered by these Specifications are acceptable for use in items covered by the Code Sections only to the degree indicated in the applicable Section. Materials for Code use should preferably be ordered, produced, and documented on this basis; however, material produced under an ASTM Specification may be used in lieu of the corresponding ASME Specification, provided the requirements of the ASTM Specification are identical (excluding editorial differences) or more stringent than the ASME Specification for the Grade, Class, or Type produced and provided that the material is confirmed as complying with the ASTM Specification. Material produced to an ASTM specification with requirements different from the requirements of the corresponding ASME Specification may also be used in accordance with the above, provided the material manufacturer or vessel manufacturer certifies with evidence acceptable to the Authorized Inspector or Authorized Nuclear Inspector that the corresponding ASME Specification requirements have been met. Material produced to an ASME or ASTM Material Specification is not limited as to country of origin.

When required by context in this Section, the singular shall be interpreted as the plural, and vice-versa; and the feminine, masculine, or neuter gender shall be treated as such other gender as appropriate.



## STATEMENT OF POLICY ON THE USE OF CODE SYMBOLS AND CODE AUTHORIZATION IN ADVERTISING

ASME has established procedures to authorize qualified organizations to perform various activities in accordance with the requirements of the ASME Boiler and Pressure Vessel Code. It is the aim of the Society to provide recognition of organizations so authorized. An organization holding authorization to perform various activities in accordance with the requirements of the Code may state this capability in its advertising literature.

Organizations that are authorized to use Code Symbols for marking items or constructions which have been constructed and inspected in compliance with the ASME Boiler and Pressure Vessel Code are issued Certificates of Authorization. It is the aim of the Society to maintain the standing of the Code Symbols for the benefit of the users, the enforcement jurisdictions, and the holders of the symbols who comply with all requirements.

Based on these objectives, the following policy has been established on the usage in advertising of facsimiles of the symbols, Certificates of Authorization, and reference to Code construction. The Ameri-

can Society of Mechanical Engineers does not "approve," "certify," "rate," or "endorse" any item, construction, or activity and there shall be no statements or implications which might so indicate. An organization holding a Code Symbol and/or a Certificate of Authorization may state in advertising literature that items, constructions, or activities "are built (produced or performed) or activities conducted in accordance with the requirements of the ASME Boiler and Pressure Vessel Code," or "meet the requirements of the ASME Boiler and Pressure Vessel Code."

The ASME Symbol shall be used only for stamping and nameplates as specifically provided in the Code. However, facsimiles may be used for the purpose of fostering the use of such construction. Such usage may be by an association or a society, or by a holder of a Code Symbol who may also use the facsimile in advertising to show that clearly specified items will carry the symbol. General usage is permitted only when all of a manufacturer's items are constructed under the rules.

## STATEMENT OF POLICY ON THE USE OF ASME MARKING TO IDENTIFY MANUFACTURED ITEMS

The ASME Boiler and Pressure Vessel Code provides rules for the construction of boilers, pressure vessels, and nuclear components. This includes requirements for materials, design, fabrication, examination, inspection, and stamping. Items constructed in accordance with all of the applicable rules of the Code are identified with the official Code Symbol Stamp described in the governing Section of the Code.

Markings such as "ASME," "ASME Standard," or any other marking including "ASME" or the various Code Symbols shall not be used on any item which is

not constructed in accordance with all of the applicable requirements of the Code.

Items shall not be described on ASME Data Report Forms nor on similar forms referring to ASME which tend to imply that all Code requirements have been met when, in fact, they have not been. Data Report Forms covering items not fully complying with ASME requirements should not refer to ASME or they should clearly identify all exceptions to the ASME requirements.

# PART HG

## GENERAL REQUIREMENTS FOR ALL MATERIALS OF CONSTRUCTION

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# ARTICLE 1

## SCOPE AND SERVICE RESTRICTIONS

### HG-100 SCOPE

The requirements of Part HG apply to steam heating boilers, hot water heating boilers, hot water supply boilers, and to appurtenances thereto, and shall be used in conjunction with the specific requirements in Part HF, Boilers of Wrought Materials, and Part HC, Cast Iron Boilers, whichever is applicable. Part HG is not intended to apply to potable water heaters except as provided for in Part HLW.

### HG-101 SERVICE RESTRICTIONS

**HG-101.1 Service Restrictions.** The rules of this Section are restricted to the following services:

(a) steam boilers for operation at pressures not exceeding 15 psi;

(b) hot water heating boilers and hot water supply boilers for operating at pressures not exceeding 160 psi and/or temperatures not exceeding 250°F, at or near the boiler outlet.

**HG-101.2 Services in Excess of Those Covered by This Section.** For services exceeding the limits specified in HG-101.1, the rules of Section I shall apply.

with the Inspector's own inspection, shall constitute his authority to sign the certificate of field inspection.

**HG-533.4 Application of Assembler's Stamp.** The assembler's H stamp, together with the assembler's name or an acceptable abbreviation, shall be applied in the field on the boiler near the stamping called for in HG-530.2, when the assembly is accepted by the Authorized Inspector.

**HG-533.5 Application for "H" Symbol.** Applicants for an "H" symbol to be used only in the field assembly of heating boilers shall so state on the application form, and the Certificate of Authorization issued to such applicants shall show that the authorization to use the "H" symbol is limited to the field assembly of welded boilers constructed to Section IV (see HG-540).

**HG-533.6 Certificate of Field Inspection.** The certificate of field inspection on the Data Report shall be executed by the Authorized Inspector. The assembler or assembling organization shall have the responsibility for forwarding and filing of Manufacturer's Data Reports as required by HG-520.1(a) and HG-520.1(b).

## **HG-540 AUTHORIZATION TO USE CODE SYMBOL STAMPS**

**HG-540.1 Symbol Authorization.** Authorization to use the symbol designated in the foregoing paragraphs HG-530, HG-531, HG-532, and HG-533 will be granted by the Society pursuant to the following provisions.

(a) Any manufacturer or assembler may apply to the Boiler and Pressure Vessel Committee of the Society, upon forms issued by the Society, for authorization to use the appropriate stamp or stamps. Each applicant must agree that if authorization to use any such stamp is granted, it will be used according to the rules and regulations of this Code and that any such stamps will be promptly returned to the Society upon demand, or in case the applicant discontinues the manufacture or assembly of the above, or in case the Certification of Authorization issued to such applicant has expired and no new certificate has been issued. The holder of any such stamps shall not permit any other manufacturer or assembler to use his stamps.

When a manufacturer builds Code equipment in plants in more than one geographical area, he may submit separate applications for each plant or a single application listing the addresses of all such plants. Each application shall identify the agency providing authorized Code Inspection at each plant. A separate

Certificate of Authorization will be prepared and a separate fee charged by the Society for each plant.

(b) Authorization to use such stamps may be granted or withheld by the Society in its absolute discretion. If authorization is given, and the proper administrative fee is paid, a Certificate of Authorization evidencing permission to use any such symbol until the triennial anniversary date, annual for cast iron, thereafter will be forwarded to the applicant. Each such certificate will be signed by the Chairman and the Secretary, or other duly authorized officer or officers, of the Boiler and Pressure Vessel Committee. Six months prior to the date of expiration of any such certificate, the applicant must apply for a renewal of such authorization and the issuance of a new certificate.

(c) The Society reserves the absolute right to cancel or refuse to renew such authorization, returning fees paid for prorated unexpired term.

(d) The Boiler and Pressure Vessel Committee may at any time and from time to time make such regulations concerning the issuance and use of such stamps as it deems appropriate, and all such regulations shall become binding upon the holders of any valid certificates of authorization.

(e) All stamps used for applying the symbol shall be obtained from the Society.

(f) Any manufacturer or assembler holding or applying for any official stamp of The American Society of Mechanical Engineers and the Certificate of Authorization shall have, and demonstrate, a quality control system to establish that all Code requirements [see HG-515.4(b) for additional requirements applicable to multiple duplicate boiler fabrication] including material, design, fabrication, examination (by the manufacturer), and inspection (by the Authorized Inspector) will be met. The quality control system shall be in accordance with the requirements of Appendix F.

Before issuance or renewal of a Certificate of Authorization, the manufacturer's facilities and organization are subject to a joint review by his inspection agency and the legal jurisdiction concerned. A written description or check list of the quality control system which explains what documents and what procedures the manufacturer will use to produce a Code item shall be available for review. A written report to the Society shall be made jointly by the jurisdiction and the inspection agency employed by the manufacturer to do his Code inspection.

The manufacturer may at any time make changes [see HG-515.4(b) for additional requirements applicable to multiple duplicate boiler fabrication] to the quality control system concerning the methods of

# PART HLW

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# INTRODUCTION

The following is a brief introduction to Part HLW. It is general in nature, and should not be considered as a substitute for actual review of appropriate articles of the document. However, this will give the user a better understanding of the purpose, requirements, and intent of Part HLW.

## HISTORY

Since the major use of water heaters is to supply clean, potable water for various cleaning purposes, after which the water is discarded, and inasmuch as the maximum water temperature is 210°F, the design, development, testing, corrosion protection, controls, installation, and end use are so different from heating boilers, it became necessary to establish separate requirements in this Section for lined water heaters supplying potable hot water for commercial purposes other than for space heating. Part HLW was prepared by a Special Task Group established by the Chairman of the ASME Subcommittee on Heating Boilers in October 1967. The Task Group prepared these rules in the course of 15 meetings held over a period of approximately 3 years and took cognizance of those requirements that are peculiar to lined water heaters. The protective linings utilized not only extend the useful life of water heaters but also provide rust-free potable water. The lining materials included in Part HLW are those which are in general use in the industry and include glass, galvanized zinc, portland cement, copper, fluorocarbon-based polymer linings, and amine or polyamine epoxy linings. Part HLW includes gas, oil, and electrically heated water heaters.

Coverage was later expanded to allow construction of lined vessels for the storage of potable water. Except for marking, construction requirements are the same as for fired vessels.

It was later recognized that some structural materials had sufficient corrosion resistance to be utilized in the construction of potable water vessels. Although unlined, a vessel so constructed would comply with

the intent of Part HLW to supply clean, potable water. The scope was expanded to include water heaters and storage tanks so constructed.

## GENERAL

Part HLW applies to water heaters in commercial or industrial sizes providing corrosion resistance for supplying potable hot water for commercial purposes. A water heater is defined as a closed vessel in which water is heated and withdrawn for use external to the system at pressures not exceeding 160 psig and temperatures not exceeding 210°F. Application to residential size water heaters is not intended and is excluded by the provisions of HLW-101.

Differences in applicable criteria for water heaters versus hot water heating boilers are as follows.

(a) In a water heater, the temperature of the water is limited to a maximum of 210°F.

(b) A water heater is intended to directly supply potable water for external use, with 100% makeup.

(c) To supply rust-free potable hot water, a water heater is provided with a corrosion resistant lining or constructed with corrosion resistant materials.

(d) Since a water heater is directly connected to a potable water supply system, certain controls and indicating instruments, such as a water level indicator, low and high water cut-offs, and pressure and altitude gauges, are not necessary on a water heater.

(e) Since the demand for potable hot water can be intermittent and of short duration, considerations are given to minimize the temperature gradation within the water heater to control the temperature of discharge water.

The following is a brief outline of the contents of each Article of Part HLW.

### Article 1 — General

The scope of Part HLW is given, and definitions of the various water heaters are stated.

**Article 2 — Materials**

The material requirements for the linings permitted are specified as well as the lining thickness requirements. The material requirements specified for the lining materials were, in general, taken from existing standards by abstracting those requirements which were considered to be those essential for the applications covered by these rules. Minimum thicknesses for the backing materials for use with each of the water heater linings is specified.

**Article 3 — Design**

The design criteria for water heaters is given in Article 3. The pressure is specified as a maximum allowable working pressure of 160 psi with a minimum of 100 psi. The maximum water temperature permitted is 210°F.

The maximum allowable working pressure of the water heater shall be established in accordance with the proof test provision of HLW-500. As an alternative, stress values in Table HLW-300 may be used in calculations employing the available formulas when applicable to the geometry of the lined water heater or parts.

**Article 4 — Weldments**

The provisions for weldment joint design are similar to those given elsewhere in this Section and in Section VIII, Division 1. In addition, some acceptable joint designs are provided which have been commonly used in the construction of water heaters and have provided satisfactory service performance.

**Article 5 — Tests**

Proof test procedure is delineated for establishing the maximum allowable working pressure of a water heater or parts, and this test is required to be witnessed and accepted by the Authorized Inspector. The Manufacturers' Master Data Proof Test Report for Lined Water Heaters shall be certified by the designated responsible engineering head of the Manufacturer and the forms shall be kept on file by the Manufacturer as a matter of record.

**Article 6 — Inspection and Stamping**

Inspection and stamping requirements for water heaters are given. An "HLW" Code symbol stamp is provided for water heaters made in accordance with Part HLW of Section IV.

**Article 7 — Controls**

Each water heater is required to have an operating control and a separate high-limit temperature-actuated control which shuts off the fuel supply in case of operating control failure. Water heaters should be equipped with suitable primary safety controls, safety limit switches, burners, or electric elements as appropriate and as required by a nationally recognized Standard. Examples of these nationally recognized Standards are listed.

**Article 8 — Installation**

Some acceptable piping installations are shown. Provisions for the installation of safety relief valves and other valves are given.

# ARTICLE 1

## GENERAL

### HLW-100 SCOPE

(a) The rules in Part HLW are applicable to water heaters providing corrosion resistance for supplying potable hot water for commercial purposes (exceeding the limitations of exceptions of HLW-101) other than for space heating.

(b) Linings for lined water heaters are limited to porcelain enameled (glass lined), galvanizing, cement, copper, fluorocarbon polymer linings, and amine or polyamine epoxy linings (see HLW-200).

(1) Glass lined water heaters are defined as those with fired glass internal coatings which are hot water resistant.

(2) Galvanized water heaters are defined as those that are hot zinc dipped after the assembly has been welded.

(3) Cement lined water heaters are those that are lined with a low-soluble, hydraulic, cement-lining material.

(4) Copper-lined water heaters are defined as those that are completely lined with sheet copper.

(5) Fluorocarbon polymer-lined water heaters are defined as those that are lined with a thermosetting fluorocarbon polymer combined with other stabilizing ingredients and applied after all fabrication has been completed.

(6) Amine or polyamine epoxy-lined water heaters are defined as those that are lined with amine or polyamine epoxy of an analysis for use in potable hot water service.

(c) The materials used in the construction of unlined corrosion resistant water heaters are limited to those listed in Table HLW-301.

(d) Tanks built under the rules of Part HLW may be used for storage of potable water. Article 7 need not apply.

(e) Water heaters and tanks built under the rules of Part HLW may be provided with cathodic protection.

(f) Any water heater or storage tank that meets all of the requirements of Part HLW, including those for inspection, may be stamped with the Code HLW symbol even though exempted from such stamping.

### HLW-101 SERVICE RESTRICTION AND EXCEPTION

The rules of Part HLW are restricted to potable water heaters and water storage tanks for operation at pressures not exceeding 160 psi and water temperatures not in excess of 210°F, except that water heaters are exempted when none of the following limitations is exceeded:

(a) heat input of 200,000 Btu/hr;

(b) water temperature of 210°F;

(c) nominal water-containing capacity of 120 gal, except that they shall be equipped with safety devices in accordance with the requirements of HLW-800.

## ARTICLE 8

# INSTALLATION REQUIREMENTS

### HLW-800 SAFETY RELIEF VALVES

#### HLW-800.1 Safety Relief Valve Requirements for Water Heaters

(a) Each water heater shall have at least one officially rated safety relief valve or at least one officially rated pressure temperature relief valve. The valve(s) shall be marked with the ASME Code Symbol "V" or "HV" to evidence compliance with the construction and rating requirements of the ASME Boiler and Pressure Vessel Code. No safety relief valve shall be smaller than  $\frac{3}{4}$  in. standard pipe size.

(b) The pressure setting shall be less than or equal to the maximum allowable working pressure of the water heater. However, if any of the other components in the hot water supply system (such as valves, pumps, expansion or storage tanks, or piping) have a lesser working pressure rating than the water heater, the pressure setting for the relief valve(s) shall be based upon the component with the lowest maximum allowable working pressure rating. If more than one safety relief valve is used, the additional valve(s) may be set within a range not to exceed 10% over the set pressure of the first valve.

(c) The required relieving capacity in Btu/hr of the safety relief valve shall not be less than the maximum allowable input unless the water heater is marked with the rated burner input capacity of the water heater on the casing in a readily visible location, in which case the rated burner input capacity may be used as a basis for sizing the safety relief valves. The relieving capacity for electric water heaters shall be 3500 Btu/hr per kW of input. In every case, the following requirements shall be met. Safety relief valve capacity for each water heater shall be such that with the fuel burning equipment installed and operated at maximum capacity the pressure cannot rise more than 10% of maximum allowable working pressures.

(d) If operating conditions are changed or additional heater heating surface is installed, the safety relief valve capacity shall be increased, if necessary, to meet the new conditions and shall be in accordance

with the above provisions. In no case shall the increased capacity exceed the maximum allowable input capacity. The additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.

### HLW-801 MOUNTING SAFETY RELIEF VALVES

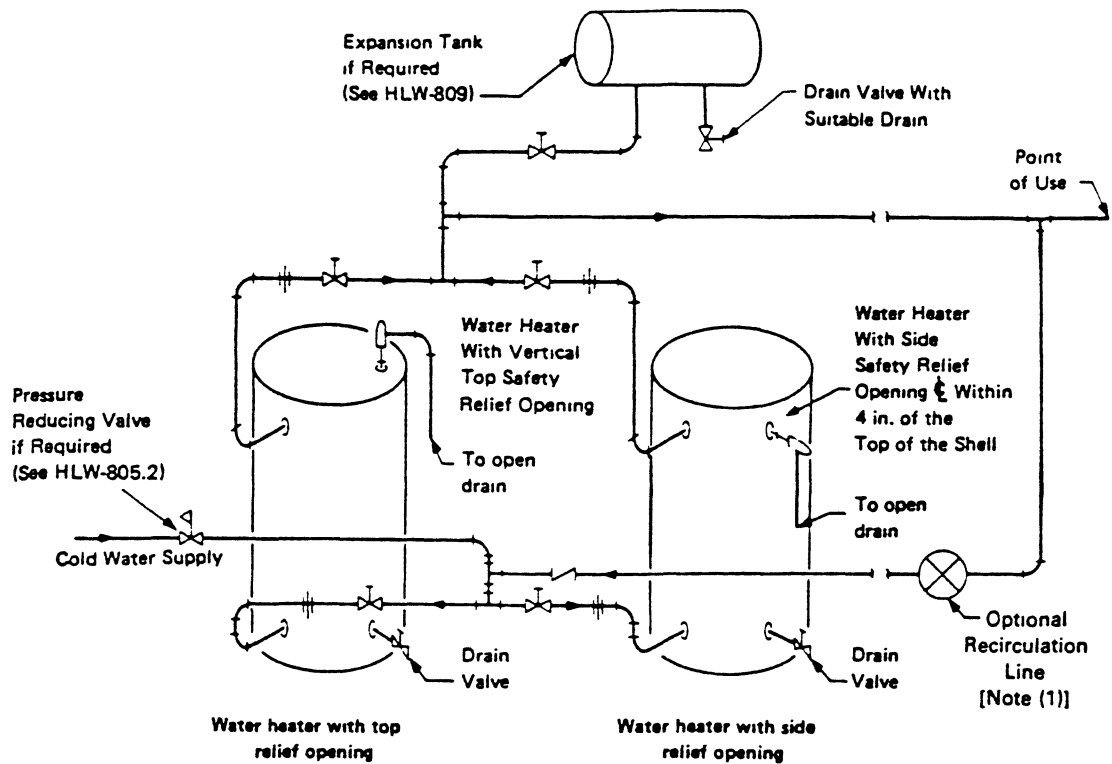
**HLW-801.1 Installation.** Safety relief valves shall be installed by either the installer or the manufacturer before a water heater is placed in operation.

**HLW-801.2 Permissible Mountings.** Safety relief valves shall be connected to the top of water heaters or directly to a tapped or flanged opening in the water heater, to a fitting connected to the water heater by a short nipple, to a Y-base, or to a valveless water heater connecting water outlets on the same heater. Safety relief valves shall be installed with their spindles upright and vertical with no horizontal connecting pipe, except that, when the safety relief valve is mounted directly on the water heater vessel with no more than 4 in. maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down. The center line of the safety relief valve connection shall be no lower than 4 in. from the top of the shell.

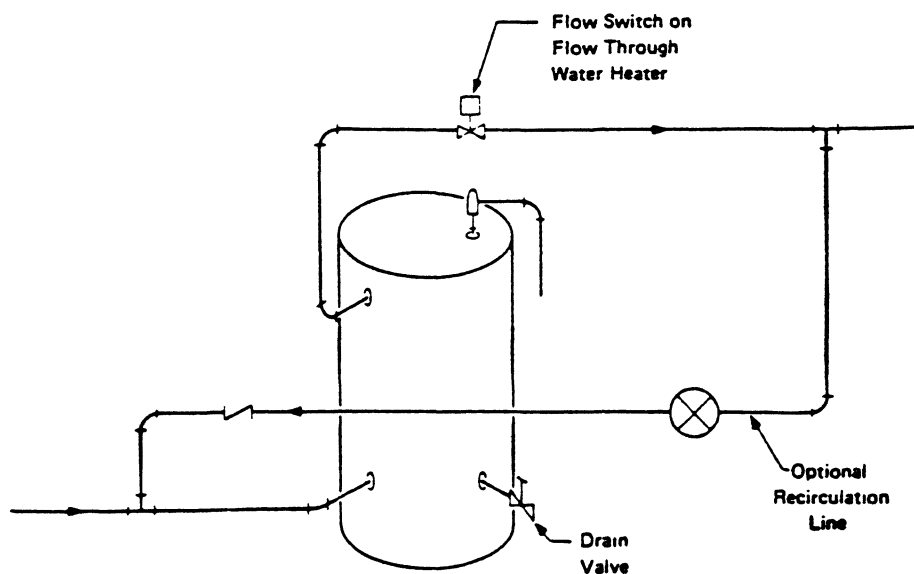
#### HLW-801.3 Requirements for Common Connections for Two or More Valves

(a) When a water heater is fitted with two or more safety relief valves on one connection, this connection shall have a cross-sectional area not less than the combined areas of inlet connections of all the safety relief valves with which it connects.

(b) When a Y-base is used, the inlet area shall be not less than the combined outlet areas. When the size of the water heater requires a safety relief valve larger than  $4\frac{1}{2}$  in. diameter, two or more valves having the

**NOTE:**

(1) Recirculation system may be gravity or pump-actuated

**FIG. HLW-809.1 A TYPICAL ACCEPTABLE PIPING INSTALLATION FOR STORAGE WATER HEATERS IN BATTERY****FIG. HLW-809.2 A TYPICAL ACCEPTABLE PIPING INSTALLATION FOR FLOW THROUGH WATER HEATER WITH PROVISIONS FOR PIPING EXPANSION**

## APPENDIX E

### DEFINITIONS

#### E-100 TERMS RELATING TO DESIGN

*Action, Popping, or Pop* — The action of a safety or safety relief valve when it opens under steam pressure. The disk of the valve is designed so that the force of the steam lifting the disk is increased when the disk is lifted slightly off its seat. The increase in force accelerates the rising action of the disk to the wide open position at or near the opening pressure.

*Blowdown* — The difference between the opening and closing pressures of a safety or relief valve.

*Boiler, Automatically Fired* — A boiler equipped with a means of introducing heat or of causing fuel, whether solid, liquid, gaseous, or electric, to be introduced into the boiler or boiler furnace, the means being so regulated by the rate of flow, the generating pressure, or temperature of the boiler fluid or of a vessel or space being heated as to maintain a determined, desired condition within a designated tolerance.

*Boiler, Horizontal-Return Tubular* — A firetube boiler consisting of a cylindrical shell, with tubes inside the shell attached to both end closures. The products of combustion pass under the bottom half of the shell and return through the tubes.

*Bottom Blowoff Valve* — A valve or cock located in the bottom blowoff connection of a boiler which, when opened, permits free passage of scale and sediment during the blowoff operation. If the blowoff outlet connection is so located that it will drain the lowest water space practicable, a separate drain connection is not necessary.

*Column, Fluid Relief* — That piping, connected to the top of a hot water heating boiler, which is provided for the thermal expansion of the water. It will connect to either an open or a closed expansion tank.

*Drain Valve* — A valve or cock located in a boiler connection which, when opened, will drain the lowest water space practicable.

*Electric Boiler, Submerged Electrode Type* — A

submerged electrode type electric boiler incorporates design wherein two or more metallic electrodes are directly suspended in the boiler water. When a source of electric power is connected to the electrode current will flow between the electrodes and through the water, thus raising the temperature of the water to produce steam.

*Electric Boiler, Resistance Heating Element Type* — Electric boilers of the resistance heating element type are either:

(a) of a design where the electric resistance element is directly attached to the external surface of the pressure vessel; or

(b) an immersed type where the electric resistance element is inserted through an opening in the pressure vessel so that the element is in direct contact with the water.

*Feedwater* — Water introduced into a boiler during operation. Includes makeup and return condensate and return water.

*Flue* — A hollow cylinder exceeding 5 in. in outside diameter and used for the conveyance of gases with temperature 850°F or less.

*Furnace* — A hollow cylinder exceeding 5 in. in outside diameter in which combustion takes place and used for the conveyance of gases having a temperature exceeding 850°F or less.

*Gases, Primary Furnace* — Primary furnace gases are those in a zone where the anticipated temperature of the gas exceeds 850°F.

*Hot Water Heating Boiler* — A boiler in which no steam is generated, from which hot water is circulated for heating purposes and then returned to the boiler and which operates at a pressure not exceeding 16 psig or a temperature of 250°F at or near the boiler outlet.

*Hot Water Supply Boiler* — A boiler completely filled with water that furnishes hot water to be used externally to itself at pressures not exceeding 160 psi or at temperatures not exceeding 250°F at or near the boiler outlet.



*Joints, Swing* — Threaded, flanged, welded, or brazed pipe and fittings so arranged that the piping system which they comprise, when connected to a boiler, can expand and contract without imposing excessive force on it.

*Lined Potable Water Heater* — A water heater with a corrosion resistant lining, used to supply potable hot water.

*Makeup Water* — Water introduced into the boiler to replace that lost or removed from the system.

*Pressure, Accumulation Test* — That steam pressure at which the capacity of a safety, safety relief, or a relief valve is determined. It is  $33\frac{1}{3}\%$  over the steam safety valve set pressure and 10% over the safety relief valve set pressure.

*Pressure, Design* — The pressure used in the design of a boiler for the purpose of determining the minimum permissible thickness or physical characteristics of the different parts of the boiler. When applicable, static head shall be added to the design pressure to determine the thickness of any specific part of the boiler.

*Pressure, Maximum Allowable* — The maximum gage pressure permissible on a completed boiler. This pressure is based on calculations for every element of the boiler using nominal thickness exclusive of allowances for corrosion and thickness required for loadings other than pressure. It is the basis for the pressure setting of the pressure relieving devices protecting the boiler.

*Pressure, Operating* — The pressure of a boiler at which it normally operates. It shall not exceed the maximum allowable working pressure and it is usually kept at a suitable level below the setting of the pressure relieving devices to prevent their frequent opening.

*Rated, Officially* — A safety, safety relief, or relief valve for use on a heating boiler which has been capacity rated in accordance with HG-402.

*Stress, Maximum Allowable* — The maximum allowable stress is the maximum unit stress permitted in a given material used in boiler constructed under these rules. The maximum allowable tensile stress values permitted for different materials are given in Tables HF-300.1, HF-300.2, and HC-300.

*Siphon* — A bent pipe or tube, between a steam pressure gage and the steam connection on a boiler, so fabricated that it contains a water seal which prevents steam entering the Bourdon tube of the gage.

*Surface, Heating, Square Feet of* — The heating surface of a boiler is that area of the boiler surface exposed to the products of combustion. In computing the heating surface for the purpose of determining the safety or relief valve requirements, only the tubes,

fireboxes, shells, tubesheets and the projected area of the headers need be considered, except that for vertical firetube boilers only that portion of the tube surface up to the middle point of the gage glass is to be computed.

*Thickness, Required* — The required thickness is that computed by the formulas in this Code.

*Tube, Fire* — Shall mean a hollow cylinder 5 in. (127 mm) or less in outside diameter and used for the conveyance of gases, flame, or hot air.

*Tube, Water* — Shall mean a hollow cylinder used for the conveyance of liquids.

*Unlined Water Heater* — A water heater made from materials that are resistant to the corrosion action of potable hot water.

*Valve, Pressure-Temperature Relief* — An automatic relieving device actuated by the static pressure upstream of the valve (which opens further with increase in the pressure over the opening pressure) or by the temperature of the fluid. It is used primarily for liquid service.

*Valve, Safety* — An automatic pressure relieving device actuated by the static pressure upstream of the valve and characterized by full-opening pop action. It is used for gas or vapor service.

*Valve, Safety, Lift of* — The movement of the disk off the seat of a safety, safety relief, or relief valve when the valve is opened. It normally refers to the amount of movement of the disk off the seat when the valve is discharging at rated pressure.

*Valve, Safety Relief* — An automatic pressure relieving device actuated by the pressure upstream of the valve and characterized by opening pop action with further increase in lift with an increase in pressure over popping pressure.

*Water Heater* — A closed vessel in which water is heated by the combustion of fuels, electricity, or any other source and withdrawn for use external to the system at pressures not exceeding 160 psig and shall include the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210°F.

*Wet-Bottom Boiler* — The term wet-bottom boiler shall mean any type of boiler which has a stayed or self-supporting, partially or fully water-cooled, shell or furnace bottom.

## E-101 TERMS RELATING TO WELDING

*Arc Stud Welding* — An arc welding process wherein coalescence is produced by heating with an arc drawn between a metal stud, or similar part, until the surfaces to be joined are properly heated, when

## **ADDENDUM C**

# 1986 Addenda

*Date of Issue: December 31, 1986*

## ASME BOILER AND PRESSURE VESSEL CODE An American National Standard

### SECTION IV Heating Boilers

1986 Edition

Addenda to the 1986 Edition of the Code are issued in the form of replacement pages. Revisions, additions, or deletions are incorporated directly into the affected pages. It is advisable, however, that these title sheets and all replaced pages be retained for reference.

#### SUMMARY OF CHANGES

This is the first Addenda to be published to the 1986 Edition of Section IV.

Replace or insert the pages listed. Changes given below are identified on the pages by a margin note, **A86**, placed next to the affected area. The pages not listed are the reverse sides of the listed pages and contain no changes.

<i>Page</i>	<i>Location</i>	<i>Change</i>
v, vi	Foreword	(1) Tenth, fourteenth, and fifteenth paragraphs revised (2) New last paragraph added
ix–xix	Personnel	Revised in its entirety
2	Contents	Updated to reflect 1986 Addenda
19	HG-312.7(f)	HG-312.7(e)(5) corrected by Errata to read HG-312.7(f)
42, 42.1	HG-402.2(f)	Added
43	HG-402.5	Third line corrected by Errata
44	HG-406	Deleted
45	HG-501.1(a)	Revised
	HG-501.1(b)	Revised
48	HG-510	Revised
57, 58	HG-603(d)	Revised
69	Contents	Updated to reflect 1986 Addenda
72–75	HF-201	Revised in its entirety

<i>Page</i>	<i>Location</i>	<i>Change</i>
72-75	HF-204.2	Revised
79-80.1	Table HF-300.1	(1) Under Forgings, Carbon Steels, SA-182 F316 and F316L added (2) Under Plate, Alloy Steel, SA-240 316 and 316L added (3) Under Tube, Alloy Steel, SA-213 316 and 316L and SA-249 316 and 316L added (4) Note (15) revised
135, 136	Contents	Updated to reflect 1986 Addenda
141	HLW-100(a)	Revised
	HLW-100(f)	(1) Redesignated as subparagraph (g) (2) New subparagraph (f) added
	HLW-100(g)	See item above for HLW-100(f)
143	HLW-201(c)	Revised
147, 147.1	Table HLW-301	(1) Under Plate, Alloy Steel: (a) SA-240 304, 304L, 316, and 316L added (b) Note references for SA-240 XM-8 revised (2) Under Tube, Alloy Steel: (a) SA-213 304, 304L, 316, and 316L and SA-249 304, 304L, 316, and 316L added (b) Note references for SA-268 XM-8 revised (3) Under Bar, Alloy Steel: (a) SA-479 304, 304L, 316, and 316L added (b) Note references for SA-479 XM-8 revised (4) New grouping Pipe, Alloy Steel added with eight grades of SA-312 (5) New grouping Forgings, Alloy Steel added with SA-182 F304, F304L, F316, and F316L (6)(a) Note (1) revised (b) Notes (2) through (4) redesignated as (3) through (5), respectively; new Note (2) added (c) Note (6) added
163	HLW-504	Revised
165, 166	HLW-601	Title revised
	HLW-601.1	Revised
	HLW-602.3	Added
192	F-100.1	Revised
193	F-202.11	Added

## FOREWORD

The American Society of Mechanical Engineers set up a committee in 1911 for the purpose of formulating standard rules for the construction of steam boilers and other pressure vessels. This committee is now called the Boiler and Pressure Vessel Committee.

The Committee's function is to establish rules of safety governing the design, fabrication, and inspection during construction of boilers and pressure vessels, and to interpret these rules when questions arise regarding their intent. In formulating the rules, the Committee considers the needs of users, manufacturers, and inspectors of pressure vessels. The objective of the rules is to afford reasonably certain protection of life and property and to provide a margin for deterioration in service so as to give a reasonably long, safe period of usefulness. Advancements in design and material and the evidence of experience have been recognized.

The Boiler and Pressure Vessel Committee deals with the care and inspection of boilers and pressure vessels in service only to the extent of providing suggested rules of good practice as an aid to owners and their inspectors.

The rules established by the Committee are not to be interpreted as approving, recommending, or endorsing any proprietary or specific design or as limiting in any way the manufacturer's freedom to choose any method of design or any form of construction that conforms to the Code rules.

The Boiler and Pressure Vessel Committee meets regularly to consider revisions of the rules, new rules as dictated by technological development, Code Cases, and requests for interpretations. Requests for interpretation must be addressed to the Secretary in writing and must give full particulars in order to receive consideration and a written interpretation (see Mandatory Appendix covering preparation of technical inquiries). Proposed revisions to the Code resulting from inquiries will be presented to the Main Committee for appropriate action. The action of the Main

Committee becomes effective only after confirmation by letter ballot of the Committee and approval by ASME.

Proposed revisions to the Code approved by the Committee are submitted to the American National Standards Institute and published in *Mechanical Engineering* to invite comments from all interested persons. After the allotted time for public review and final approval by ASME, revisions are published annually in Addenda to the Code.

Code Cases may be used in the construction of components to be stamped with the ASME Code symbol beginning with the date of their approval by ASME.

After Code revisions are approved by ASME, they may be used beginning with the date of issuance shown on the Addenda. Revisions become mandatory as minimum requirements six months after such date of issuance, except for boilers or pressure vessels contracted for prior to the end of the six-month period.

Manufacturers and users of components are cautioned against making use of revisions and Cases that are less restrictive than former requirements without having assurance that they have been accepted by the proper authorities in the jurisdiction where the component is to be installed.

Each state and municipality in the United States and each province in the Dominion of Canada that adopts or accepts one or more Sections of the Boiler and Pressure Vessel Code is invited to appoint a representative to act on the Conference Committee to the Boiler and Pressure Vessel Committee. Since the members of the Conference Committee are in active contact with the administration and enforcement of the rules, the requirements for inspection in this Code correspond with those in effect in their respective jurisdictions. The required qualifications for an Authorized Inspector under these rules may be obtained

A86

from the administrative authority of any state, municipality, or province which has adopted these rules.

The Boiler and Pressure Vessel Committee in the formulation of its rules and in the establishment of maximum design and operating pressures considers materials, construction, methods of fabrication, inspection, and safety devices. Permission may be granted to regulatory bodies and organizations publishing safety standards to use a complete Section of the Code by reference. If usage of a Section, such as Section IX, involves exceptions, omissions, or changes in provisions, the intent of the Code might not be attained.

Where a state or other regulatory body, in the printing of any Section of the Boiler and Pressure Vessel Code, makes additions or omissions, it is recommended that such changes be clearly indicated.

The National Board of Boiler and Pressure Vessel Inspectors is composed of chief inspectors of states and municipalities in the United States and of provinces in the Dominion of Canada that have adopted the Boiler and Pressure Vessel Code. This Board, since its organization in 1919, has functioned to uniformly administer and enforce the rules of the Boiler and Pressure Vessel Code. The cooperation of that organization with the Boiler and Pressure Vessel Committee has been extremely helpful.

**A86** It should be pointed out that the state or municipality where the Boiler and Pressure Vessel Code has been made effective has definite jurisdiction over any particular installation. Inquiries dealing with problems of local character should be directed to the proper authority of such state or municipality. States, provinces, municipalities, or other regulatory bodies may, if there is any question or doubt as to the proper interpretation, refer the question to the Boiler and Pressure Vessel Committee.

**A86** The Specifications for base materials given in Section II, Parts A and B, are identical with or similar to those of The American Society for Testing and Materials. When reference is made in an ASME Material Specification to an ASTM Specification for which a companion ASME Specification exists, the reference shall be interpreted as applying to the

ASME Material Specification. Specifications for welding materials given in Section II, Part C, are identical with or similar to those of the American Welding Society. Not all materials included in the ASME Material Specifications in Section II have been adopted for Code use. Usage is limited to those materials and grades adopted by at least one of the other Sections of the Code for application under rules of that Section. All materials allowed by these various Sections and used for construction within the scope of their rules shall be furnished in accordance with ASME Material Specifications contained in Section II except where otherwise provided in Code Cases or in the applicable Section of the Code. Materials covered by these Specifications are acceptable for use in items covered by the Code Sections only to the degree indicated in the applicable Section. Materials for Code use should preferably be ordered, produced, and documented on this basis; however, material produced under an ASTM Specification may be used in lieu of the corresponding ASME Specification, provided the requirements of the ASTM Specification are identical (excluding editorial differences) or more stringent than the ASME Specification for the Grade, Class, or Type produced and provided that the material is confirmed as complying with the ASTM Specification. Material produced to an ASTM specification with requirements different from the requirements of the corresponding ASME Specification may also be used in accordance with the above, provided the material manufacturer or vessel manufacturer certifies with evidence acceptable to the Authorized Inspector that the corresponding ASME Specification requirements have been met. Material produced to an ASME or ASTM Material Specification is not limited as to country of origin.

When required by context in this Section, the singular shall be interpreted as the plural, and vice-versa; and the feminine, masculine, or neuter gender shall be treated as such other gender as appropriate.

Publication of the SI (Metric) Edition of the ASME Boiler and Pressure Vessel Code was discontinued with the 1986 Edition. Effective October 1, 1986, the SI Edition was withdrawn as an ASME Boiler and Pressure Vessel Code document.

**A86**

# ARTICLE 1

## GENERAL

### HLW-100 SCOPE

A86 (a) The rules in Part HLW are applicable to water heaters providing corrosion resistance for supplying potable hot water for commercial purposes at pressures not exceeding 160 psi and temperatures not in excess of 210°F. Part HLW is not intended to apply to hot water heating boilers.

(b) Linings for lined water heaters are limited to porcelain enameled (glass lined), galvanizing, cement, copper, fluorocarbon polymer linings, and amine or polyamine epoxy linings (see HLW-200).

(1) Glass lined water heaters are defined as those with fired glass internal coatings which are hot water resistant.

(2) Galvanized water heaters are defined as those that are hot zinc dipped after the assembly has been welded.

(3) Cement lined water heaters are those that are lined with a low-soluble, hydraulic, cement-lining material.

(4) Copper-lined water heaters are defined as those that are completely lined with sheet copper.

(5) Fluorocarbon polymer-lined water heaters are defined as those that are lined with a thermosetting fluorocarbon polymer combined with other stabilizing ingredients and applied after all fabrication has been completed.

(6) Amine or polyamine epoxy-lined water heaters are defined as those that are lined with amine or polyamine epoxy of an analysis for use in potable hot water service.

(c) The materials used in the construction of unlined corrosion resistant water heaters are limited to those listed in Table HLW-301.

(d) Tanks built under the rules of Part HLW may be used for storage of potable water. Article 7 need not apply.

(e) Water heaters and tanks built under the rules of Part HLW may be provided with cathodic protection.

(f) Water heaters used for deionized water fabrication of stainless steel listed in Table HLW-301 may be built to Part HLW provided:

(1) all welding meets the requirements of Section IX;

(2) the maximum thickness shall be  $\frac{1}{2}$  in.

(g) Any water heater or storage tank that meets all of the requirements of Part HLW, including those for inspection, may be stamped with the Code HLW symbol even though exempted from such stamping.

## **ADDENDUM E**



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**THE STATE OF UTAH**  
**BOILER AND PRESSURE VESSEL**  
**RULES AND REGULATIONS**



**EFFECTIVE**  
**OCTOBER 1, 1988**

**REVISED AND APPROVED BY THE BOILER REVIEW BOARD**  
**MAY 31, 1988**

**ISSUED BY**  
**THE INDUSTRIAL COMMISSION OF UTAH**  
**SAFETY DIVISION**

**REV. 3**

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## **SPECIAL ATTENTION!**

**EFFECTIVE 1ST OF JANUARY 1984, ALL NEW BOILERS INSTALLED IN THIS STATE SHALL BE INSPECTED BY A BOILER INSPECTOR FROM THE INDUSTRIAL COMMISSION OF UTAH FOR CODE COMPLIANCE, AND THE AFFIXING OF A STATE BOILER NUMBER.**

### **CAUTION**

**KINDLY OBSERVE THE FOLLOWING BRIEFS AND AVOID UN-NECESSARY INCONVENIENCE**

**DO NOT** buy secondhand boilers or pressure vessels for use in this State without notifying this Department and securing permission for operation of same. See Part II, Article 24.

**DO NOT** operate any boilers or pressure vessels until same has been inspected by a State Boiler Inspector from this Department or a duly authorized insurance company inspector and a certificate of inspection has been received permitting the operation of same.

**DO NOT** fail to post certificate of inspection in the boiler room or if the boiler is of portable type, on inside of cab or in a metal container or kept in tool box attached. See Part I, Article 16.

**DO NOT** do, or have done, any WELDING on Pressure Retaining Parts until you have received instructions either from this Department or your insurance carrier. All welding must be performed by welders who have qualified to the ASME Code, Section IX. See Part II, Article 27.

**IN CASE OF ACCIDENT** to a boiler or pressure vessel, secure permission from either the insurance company if the boiler or pressure vessel is insured or from the State if uninsured, before any changes are made or before any parts are removed. See Part II, Article 18.

# **BOILER AND PRESSURE VESSEL LAW**



**NORMAN H. BANGERTER**  
Governor

**THE INDUSTRIAL COMMISSION OF UTAH**  
160 East 300 South  
P.O. BOX 510910  
SALT LAKE CITY, UTAH 84151-0910

**STEPHEN M. HADLEY**  
Chairman

**JOHN FLOREZ**  
Commissioner

**THOMAS R. CARLSON**  
Commissioner

## **BOILER AND PRESSURE VESSEL RULES AND REGULATIONS**

Recognition and credit are given to the following members of the boiler and pressure vessel review board who formulated these rules and regulations. Members include representatives from Manufacturers of Pressure Vessels, Users of Low Pressure Boilers, Insurance Companies, Public Interest, and Petro-Chemical Industry, each with technical expertise in the boiler and pressure vessel industry.

1. Mr. Paul Clayton  
Rocky Mountain Fabrication
2. Dr. Larry DeVries  
University of Utah
3. Mr. Rodney Green  
Granite School District
4. Mr. Lloyd Gustaveson  
Church of Jesus Christ of Latter-Day Saints
5. Mr. B. A. Hinton  
Amoco Oil Company
6. Mr. Paul M. Howe  
Factory Mutual Systems
7. Mr. James C. Parsell  
Safety Director, State of Utah

## **BOILER AND PRESSURE VESSEL SAFETY ACT**

*The rules and regulations contained herein have been promulgated by the Industrial Commission of Utah, Safety Division, under authority of the Utah Code, Volume 4B Chapter 7, Sections 35-7-5 thru 35-7-9. They were adopted after all public comment had been reviewed on February 24, 1978, and become effective May 1, 1978.*

*Industrial Commission of Utah*

**Stephen M. Hadley**  
*Chairman*

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# **STATE OF UTAH BOILER AND PRESSURE VESSEL RULES AND REGULATIONS**

## **PART I — DEFINITIONS OF TERMS**

1. **THE ACT** means the Boiler and Pressure Vessel Safety Act of 1967, which fixes many provisions by legislation and provides for the adoption and enforcement of safety rules and administration of the Act by The Industrial Commission of Utah.

The Act reads as follows: "This Act shall, except as otherwise provided here, (See Part II, Article 16), cover all boilers and pressure vessels used in industrial or manufacturing establishments, business establishments, sawmills, construction jobs and every place where workmen or the public may be exposed to the risks thereof."

2. **ANSI/API 510** means the latest edition of the American National Standards Institute/American Petroleum Institute approved national standard Pressure Vessel Inspection Code for Maintenance, Inspection, Repair, and Alteration.

3. **ASME CODE** means the latest edition of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers with such revisions, amendments, and interpretations thereof as are made, approved and adopted by the Society and approved and adopted by The Commission. Copies of the Code may be obtained from said Society at 345 East 47th Street, New York, New York 10017.

4. **APPROVED** means approved by the Commission.

5. **AUTHORIZED INSPECTION AGENCY** means one of the following:

(a) A department or division established by a state, commonwealth or municipality of the United States, or a province of Canada which has adopted one or more sections of the Boiler and Pressure Vessel Code of the ASME and whose inspectors hold valid commissions with the National Board of Boiler and Pressure Vessel Inspectors.

(b) An inspection agency of an insurance company which is authorized (licensed) to write boiler and pressure vessel insurance in those jurisdictions which have examined the agency's inspectors to represent such jurisdictions as is evident by the issuance of a valid Certificate of Competency to the inspector.

(c) An Owner-User Inspection Agency that meets the requirements of Part II, Article 15.

6. **BOILER** means a closed vessel in which water is heated, steam is generated, steam is superheated, or any combination thereof, under pressure or vacuum by the direct application of heat.

The term "boiler" includes fired units for heating or vaporizing liquids other than water where these units are separate from processing systems and complete within themselves.

(a) **POWER BOILER** means a boiler in which steam or other vapor is generated at a pressure of more than 15 psig.

(b) **HIGH-TEMPERATURE WATER BOILER** means a water\* boiler intended for operation at pressures in excess of 160 psig and/or temperatures in excess of 250 degrees F.

(c) **PROCESS STEAM GENERATOR** means a vessel or system of vessels comprised of one or more drums and one or more heat exchange surfaces as used in waste heat or heat recovery type steam boilers.

(d) **ELECTRIC BOILER** means a power boiler, heating boiler, high-temperature or low-temperature water\* boiler in which the source of heat is electricity.

(e) **MINIATURE BOILER** means a power boiler or high-temperature water boiler which does not exceed the following limits:

- (1) 16 in. inside diameter of shell.
- (2) 20 sq. ft. heating surface (not applicable to electric boilers).
- (3) 5 cu. ft. gross volume exclusive of casing and insulation.
- (4) 100 psig maximum allowable working pressure.

(f) **UNFIRED STEAM BOILER** means a vessel or system of vessels intended for operation at a pressure in excess of 15 psig for the purpose of producing and controlling an output of thermal energy.

(g) **WASTE HEAT BOILER** — (See Unfired Steam Boiler).

(h) **HEAT RECOVERY BOILER** — (See Process Steam Generator).

(i) **STEAM HEATING BOILER** means a steam boiler for operation at pressures not exceeding 15 psig.

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\* Includes other fluids.

(j) **HOT WATER HEATING BOILER** means a boiler in which no steam is generated, from which hot water is circulated for heating purposes and then returned to the boiler, and which operates at a pressure not exceeding 160 psig and/or at temperatures of 250 degrees F. at or near the boiler outlet.

(k) **HOT WATER SUPPLY BOILER** means a boiler completely filled with water that furnishes hot water to be used externally to itself at pressures not exceeding 160 psig or at temperatures not exceeding 250 degrees F at or near the boiler outlet.

(l) **LINED POTABLE WATER HEATER** means a water heater with a corrosion resistant lining, used to supply potable hot water.

(m) **WATER HEATER** means a closed vessel in which water is heated by the combustion of fuels, electricity or any other sources and withdrawn for use external to the system at pressures not exceeding 160 psig and shall include all controls and devices necessary to prevent water temperatures from exceeding 210 degrees F.

7. **CERTIFICATE OF COMPETENCY** means a certificate issued to a person who has passed the prescribed examination as provided in Part II, Article 8.

8. **CERTIFICATE INSPECTION** means an inspection, the report of which is used by the Safety Director as justification for issuing, withholding or revoking the Inspection Certificate.

This certificate inspection shall be an internal inspection when required; otherwise, it shall be as complete an inspection as possible.

(a) **INTERNAL INSPECTION** means as complete an examination as can reasonably be made of the internal and external surfaces of a boiler or pressure vessel while it is shut down and manhole plates, handhold plates or other inspection opening closures are removed.

(b) **EXTERNAL INSPECTION** means an inspection made when a boiler or pressure vessel is in operation.

9. **CODE** means the applicable section of the ASME Code as defined in Part I, Article 3, and (for unfired pressure vessels which were contracted for prior to the withdrawal of the API-ASME Code in 1956) includes editions of the API-ASME Code for unfired pressure vessels jointly published by the American Petroleum Institute and the American Society of Mechanical Engineers.

10. **COMMISSION, NATIONAL BOARD** means the commission issued by the National Board to a holder of a Certificate of Competency who desires to make shop inspections or field inspections in accordance with the National Board By-Laws and whose employer submits the inspector's application to the National Board for such Commission.

11. **COMMISSION** means the Industrial Commission, State of Utah.

12. **COMMISSIONER** means the Commissioner in charge of the Safety Division.

13. **CONDEMNED BOILER OR PRESSURE VESSEL** means a boiler or pressure vessel that has been inspected and declared unsafe, or disqualified by legal requirements by the Safety Director who has applied a stamping or marking designating its condemnation.

14. **DIVISION** means the Boiler and Pressure Vessel Safety Division of The Industrial Commission of Utah.

15. **EXISTING INSTALLATION** means and includes any boiler or pressure vessel which was in compliance with the applicable Rules and Regulations in effect at the earliest date contracted for, constructed, installed, or placed in operation.

16. **INSPECTION CERTIFICATE** means a certificate issued by the State for the operation of a boiler or pressure vessel.

17. **INSPECTOR** means any State Inspector, Deputy Inspector or Owner/User Agent.

(a) **STATE INSPECTOR** means any Boiler and Pressure Vessel Inspector employed by the State of Utah, including the Safety Director.

(b) **DEPUTY INSPECTOR** means any inspector appointed by the Commission, holding a Utah Certificate of Competency and employed by an insurance company authorized to insure against loss from an explosion of boiler and pressure vessels in the State of Utah.

(c) **OWNER/USER AGENT** means any inspector holding a Utah Certificate of Competency, and who is regularly employed by an owner/user agency as defined in Part II, Article 15.

18. **REPAIR** means work necessary to return a boiler or pressure vessel to a safe and satisfactory operating condition.

(a) **MAJOR REPAIRS** means a repair upon which the strength of a boiler or pressure vessel will depend.

(b) **ALTERATION** means a change in a boiler or pressure

vessel that substantially alters the original design requiring consideration of the effect of the change on the original design. It is not intended that the addition of nozzles smaller than an unreinforced opening size be considered an alteration.

**19. SAFETY AND SAFETY RELIEF VALVE REPAIRS** means all repairs to such valves and includes the replacement or rework of critical parts which may affect the valve's flow passage, capacity, function, or pressure retaining integrity.

**20. NATIONAL BOARD** means the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229, whose membership is composed of the Safety Directors and Chiefs of government jurisdictions who are charged with the enforcement of the provision of the ASME Code.

**21. NATIONAL BOARD INSPECTION CODE** means the latest edition of the manual supplied by the National Board for Boiler and Pressure Vessel Inspectors.  
Copies of this Code may be obtained from the National Board.

**22. NEW BOILER OR PRESSURE VESSEL INSTALLATION** means and includes all boilers or pressure vessels, other than existing installations, constructed, installed, placed in operation, or contracted for after May 1967.

**23. NONSTANDARD BOILER OR PRESSURE VESSEL** means a boiler or pressure vessel that does not bear this state's stamp, Code stamp, or the stamp of any state or political subdivision which has adopted a standard of construction equivalent to that required by the Commission.

**24. OWNER OR USER** means any person, firm or corporation legally responsible for the safe operation of pressure vessels within the state.

**25. PRESSURE VESSEL** means a vessel in which the pressure is obtained from external source, or by the application of heat from an indirect source, or from a direct source, other than those boilers defined in Part I, Article 6.

**26. PSIG** means pounds per square inch gage.

**27. REINSTALLED BOILER OR PRESSURE VESSEL** means a

boiler or pressure vessel removed from its original setting and reinstalled at the same location or at a new location without change of ownership.

**28. SECONDHAND BOILER OR PRESSURE VESSEL** means a boiler or pressure vessel which has changed both location and ownership since the last certificate inspection.

**29. STANDARD BOILER OR PRESSURE VESSEL** means a boiler or pressure vessel which bears the stamp of the State of Utah or of another state which has adopted a standard of construction equivalent to that required by the Commission, the Code stamp, or both the ASME and the National Board stamps.

**30. Nuclear Power Plants.** See ASME, Boiler and Pressure Vessel Code, Section III.

## **PART II – ADMINISTRATION**

### **1. MINIMUM CONSTRUCTION STANDARDS FOR BOILERS AND PRESSURE VESSELS**

(a) All boilers and pressure vessels used in industrial or manufacturing establishments, business establishments, construction job and every place where workmen or the public may be exposed to the risks thereof shall be designed, constructed, inspected, stamped and installed in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code and the latest Addenda thereto, in effect, and these Rules and Regulations.

(b) Boilers and pressure vessels installed after May 1, 1978 shall be registered with the National Board and shall bear the National Board number. A copy of the manufacturer's data report, signed by the manufacturer's representative and the National Board commissioned inspector, shall be filed by the manufacturer with the National Board prior to installation in the State of Utah.

(c) Steam Pressure Piping-All steam pressure piping external to power boilers from the boiler to the first stop valve of a single boiler, and to the second stop valve in a battery of two or more boilers, installed after May 1, 1978 shall comply to the ASME Code, Section I, and ANSI B 31.1 this piping is also covered by Utah's Boiler Rules and Regulations, and the applicable ASME Data Report Form P4a covering such piping shall be furnished by the owner or installer, to the Industrial Commission of Utah.

(d) State of Utah Special-If a boiler or pressure vessel is of special design or one that cannot bear ASME stamping, details of the proposed construction, including shop drawings, shall be submitted to the Safety Director. Approval as "State of Utah Special" for construction and installation must be obtained from the Commission before construction is started.

### **2. REQUIREMENTS FOR NEW INSTALLATION**

No boiler or pressure vessel shall hereafter be installed in this State unless it has been constructed, inspected, and stamped in conformity with the ASME Code, including the National Board stamp; except:

- (a) Those exempt by the Act.
- (b) Those outlined in Part II, Article 1 (d).
- (c) Those existing boilers and pressure vessels which are to be reinstalled.

All boiler and pressure vessel installations, including reinstalled and secondhand boilers and pressure vessels, shall be installed in accordance with the requirements of the ASME Code and these Rules and Regulations. Boiler installations shall also comply with the ASME Safety Code CSD-1.

The stamping shall not be concealed by lagging or paint and shall be exposed at all times unless a suitable record is kept of the location of the stamping so that it may be readily uncovered at any desired time.

### **3. SAFETY AND SAFETY RELIEF VALVES, AND REPAIR OF SAFETY AND SAFETY RELIEF VALVES**

(a) All safety and safety relief valves that are installed new on boilers and pressure vessels to which the Rules and Regulations apply after May 1, 1978 shall bear the ASME and National Board symbols.

(b) Effective January 1, 1979, all safety and safety relief valves that are installed on boilers and pressure vessels to which these Rules and Regulations apply, which require resetting or repair, the work shall be performed by a firm that holds National Board authorization to use the stamp bearing their repair symbol.

### **4. FREQUENCY OF INSPECTIONS OF BOILERS AND PRESSURE VESSELS**

(a) Power boilers shall receive certificate inspections annually. One inspection must be internal and the other external, while the boiler is in operation.

(b) High temperature and high pressure water boilers shall be inspected externally, under operating conditions, annually. Internal inspections will be at the discretion of the inspector.

The inspection period for power boilers and high temperature and high pressure water boilers may be extended by the Industrial Commission upon written application of the owner/user, with the recommendation of an authorized inspector. Such extensions will be granted in writing by the Industrial Commission. The original and one copy will go to the owner/user, another copy will go to the authorized inspector.

(c) Heating boilers shall receive certificate inspections biennially.

(1) For steel steam boilers this shall include an internal and external inspection. The external inspection shall be performed while the boiler is in service, within the previous 24 month period.



(2) Hot water heating boilers shall be inspected when the boiler is in service. Internal inspections shall be at the discretion of the inspector.

(d) Pressure vessels shall be inspected every sixty (60) months. This inspection shall be an external with an internal at the discretion of the inspector where construction permits.

## **5. NOTIFICATION OF INSPECTION**

Certificate inspections shall be scheduled in accordance with the frequency established in Article 4, above, and at a time mutually agreeable to the inspector and owner or user.

External inspections may be performed by the inspector during reasonable hours and without prior notification.

When as a result of external inspection or determination by other objective means it is the inspector's opinion that continued operation of the boiler or pressure vessel constitutes a menace to public safety, the inspector may request an internal inspection and/or an appropriate pressure test to evaluate conditions. In such instances the owner or user shall prepare the boiler for an internal inspection and/or an appropriate pressure test as the inspector designates.

## **6. INSPECTION CERTIFICATE AND INSPECTION FEES**

If a boiler after inspection, is found to be suitable and to conform to these Rules and Regulations, a Certificate of Inspection valid for 12 months for power boilers and 24 months for low pressure boilers is issued by the inspector.

A legible Certificate of Inspection and Permit to Operate a Boiler shall be displayed in a conspicuous location near the boiler for the entire validation period. (Certificate must be protected under a transparent cover.)

If an owner/user of a boiler required to be inspected refuses to allow an inspection to be made, a certificate will not be issued. If he refuses to pay the fee, the certificate shall not be issued. A valid Certificate may be obtained only when the owner/user complies with the requirements.

The owner or user who causes a boiler or pressure vessel to be operated without a valid inspection certificate shall be subject to the penalty as provided for in Section 35-7-9 of the Act, which reads:

"35-7-9. Violation of Act—Misdemeanor—Penalty.—On and after July 1, 1967, it shall be unlawful for any person, firm, partnership or corporation to operate a boiler or pressure vessel to which this Act applies in violation of

this Act. Such violation shall constitute a misdemeanor on the part of the owner, user or operator thereof, and be punishable for a fine not exceeding \$100 or imprisonment not to exceed ninety days or both, at the discretion of the Court."

#### **7. VALIDITY OF INSPECTION CERTIFICATE**

An inspection certificate, issued in accordance with Part II, Article 6 shall be valid until expiration unless a code violation, defect or condition affecting the safety of the boiler is disclosed.

#### **8. EXAMINATION FOR AN INSPECTOR'S CERTIFICATE OF COMPETENCY (STATE OF UTAH)**

Examination for an inspector's Certificate of Competency shall be held at the office of the Commission or at any other location to be selected by the Commission, four (4) times each year; namely, the first Wednesday of the months of March, June, September, December.

An applicant for an examination shall have education and experience equal to at least one of the following:

(a) From an accredited school, a degree in engineering plus one year experience in design, construction, operation or inspection of high pressure boilers and pressure vessels;

or

(b) An associate degree in mechanical technology plus two years experience in design, construction, operation or inspection of high pressure boilers and pressure vessels; or

(c) A high school education or the equivalent plus three years experience:

1) in high pressure boiler and pressure vessel construction or repair,

or

2) in charge of high pressure boiler and pressure vessel operation,

or

3) in the inspection of high pressure boilers and pressure vessels.

Applications for examination shall be in writing on a form to be furnished by the Commissioner stating the education of the applicant, a list of his employers, his period of employment and position held with each employer.

Applications containing willful falsifications or untruthful statements shall be rejected.

If the applicant's education and experience are acceptable to the Commission, he shall be given a written examination dealing with the construction, installation, operation, maintenance and repair of boilers and pressure vessels and their appurtenances, and the applicant shall be accepted or rejected on the merits of the examination.

If the applicant is successful in meeting the requirements of the Commission, a Certificate of Competency will be issued by the Commission, when the inspector is employed on a full-time basis by an authorized inspection agency as defined in Part I, Article 5.

Upon the expiration of ninety (90) days, an applicant who fails to pass the examination will be permitted to take another written examination and his acceptance or rejection will be determined by the Commission on the basis of this examination.

#### **9. EXAMINATION FEES**

A fee of twenty-five (\$25.00) will be charged for each applicant taking the examination for Certificate of Competency. Checks or money orders for examination fees shall be made payable to the Commission and sent to the Safety Director.

#### **10. CERTIFICATE OF COMPETENCY AND IDENTIFICATION CARD**

Upon request, a Certificate of Competency and an Identification Card shall be issued by the Commission to:

(a) An inspector who is employed full-time by a governmental authority having an authorized inspection agency as defined in Part I, Article 5(b).

(b) An inspector who is employed full-time by an insurance company which is authorized to insure against loss from explosions of boilers and pressure vessels in Utah.

(c) Upon application to the Commission, an Owner-User certificate for inspectors of pressure vessels may be issued on an individual basis. Owner-User inspectors shall be an employee of said Owner-User and may only conduct inspections on items within facilities of and owned and operated by his employer.

Inspectors so designated may be issued a Certificate of Competency only after successfully passing a written and oral examination administered by the Commission in accordance with Part II Article 8 above. Such Certificates of Competency shall be overprinted "Owner-User" and shall be subject to renewal annually.

An Owner-User employing inspectors for his own equipment under this Part II of the Rules and Regulations shall have readily available for the inspector's use, latest edition of the National Board Inspection Code.

The Commission reserves the right to conduct its own inspections on Owner-User items at any time deemed necessary by the Commission. Such Commission inspections shall be subject to charges or fees at rates as set by the Commission.

(d) Before a Certificate of Competency and an Identification Card from the State of Utah are issued to a deputy inspector as defined in Part I, Article 17(b), said inspector shall be interviewed by the Safety Director, or designee.

**PROVIDED**

- (1) The applicant has satisfactorily passed the examination as set forth in Part II, Article 8 and Article 9; or
- (2) The applicant holds a valid Commission or Certificate of Competency from a state that has a standard of examination substantially equal to that of Utah, and a valid Commission and Identification Card issued by the National Board.

The request for the Certificate of Competency and Identification Card shall be completed on forms to be provided by the Safety Director and shall be accompanied by a facsimile of the applicant's National Board Commission and Identification Card, and a fee of \$15.00.

The Certificate of Competency and valid Identification Card shall be returned to the Safety Director when the inspector to whom they were issued is no longer employed by the organization employing him at the time the Certificate was issued.

Each person holding a valid Certificate of Competency and who conducts inspections as provided by the Safety Act shall apply through the organization employing him to the Safety Director on forms provided and obtain Identification Card annually. A fee of \$15.00 will be required for each Identification card.

An inspector's Certificate of Competency may be suspended by the Safety Director after due investigation and recommendation by the Commissioner, for incompetency or untrustworthiness of the holder thereof, or for willful falsification of any matter or statement contained in his application, or in a report of any inspection made by him. Written notice of any such suspension shall be given by the Safety Director, within ten (10) days, to the inspector and his employer. Persons

whose Certificate of Competency has been suspended shall be entitled to an appeal to the Commission and to be present in person or to be represented by counsel at the hearing of the appeal.

**11. INSPECTORS TO HAVE NO OTHER INTERESTS**

Inspectors shall not engage in the sale of any article or device relating to boilers, pressure vessels, or their appurtenances.

**12. INSPECTION REPORTS TO BE SUBMITTED BY  
DEPUTY INSPECTORS**

(a) Deputy Inspectors shall, within one (1) year of the effective date of these Rules and Regulations for power boilers and high-pressure, high-temperature water boilers, two (2) years for low pressure boilers, submit to the Safety Director an inspection report on Form NB-5 of the National Board Inspection Code for boilers subject to inspection in this state. Complete data shall be submitted on Form NB-5 for nonstandard boilers.

(b) Subsequent inspections of both standard and non-standard boilers and pressure vessels shall be reported on Forms NB-6 and NB-7 of the National Board Inspection Code.

(c) Inspections reports, as required in (a) and (b) above, shall be submitted within thirty (30) days from date of inspection.

(d) When hazardous conditions affecting the safety of a boiler or pressure vessel are found to exist at the time of any inspection, the inspector shall report such conditions immediately to the Safety Director on Form NB-6 or NB-7.

(e) Owner-User Inspection Agencies may report subsequent inspections of both standard and non-standard pressure vessels on Form NB-7 or at their option, upon forms approved by the Commission. Such reports should be filed as provided in Part II, Article 15.

**13. INSURANCE COMPANIES TO NOTIFY SAFETY DIRECTOR OF NEW, CANCELLED OR SUSPENDED  
INSURANCE ON BOILERS OR PRESSURE VESSELS.**

All insurance companies shall notify the Safety Director in writing, within thirty (30) days, of new, cancelled, expired, suspended or rejected insurance coverage on all boilers or pressure vessels.

#### **14. INSPECTORS TO NOTIFY SAFETY DIRECTOR OF UNSAFE BOILERS AND PRESSURE VESSELS.**

If an Inspector, upon first inspection of a new risk, finds that a boiler or pressure vessel, or any appurtenance thereof, is in such condition that his company would refuse insurance, the company shall immediately notify the Safety Director and submit a report on the defects.

If, upon inspection, an Inspector finds a boiler or pressure vessel to be unsafe for further operation, he shall promptly notify the owner or user stating what repairs or other corrective measures are required to bring the object into compliance with these Rules and Regulations. Unless the owner or user agrees to make such repairs or adopt such other corrective measures promptly, the Inspector shall immediately notify the Safety Director. Until such corrections have been made further operation of the boiler or pressure vessel involved shall not be permitted. If an Inspection Certificate for the object is then in force, it shall be suspended by the Safety Director, until such time that a reinspection establishes that the necessary repairs or corrective actions have been taken and that the boiler or pressure vessel is safe to operate.

#### **15. OWNER-USER INSPECTION AGENCY**

Any person, firm, partnership or corporation operating pressure vessels in this State may seek approval and registration as an Owner-User Inspection Agency by filing an application with the Safety Director on forms prescribed and available from the Department, and request approval by the Commission.

Such application and registration shall show the name of such agency and its principal address in this State, including branches or other locations within the State, and the name and address of the person or persons having supervision over inspections made by such agency. Changes in such supervisory personnel shall be reported to the Safety Director within thirty days after any such change.

Each Owner-User Inspection Agency as required by the provisions of the Boiler Safety Act and these rules and regulations shall:

(a) Conduct inspections of unfired pressure vessels, not exempt by the Act, utilizing only qualified inspection personnel, as provided in Part II, Article 8.

(b) Retain on file at the location where the equipment is inspected a true record or copy of the report of the latest of each inspection signed by the inspector who made the inspection.

(c) Execute and deliver to the owner or user (management) a true report of each inspection together with appropriate requirements or recommendations that result from such inspections.

(d) Promptly notify the Safety Director of any unfired pressure vessel which does not meet the requirements of safe operating conditions.

(e) Maintain inspection records which will include a list of each unfired pressure vessel covered by the Act, showing an assigned State number and such abbreviated description as may be necessary for identification; the date of last inspection of each unit and approximate date for the next inspection, arrived at by applying the appropriate rules to all data available at the time such inspection record is compiled (re: Frequency and type of inspection, see Part II, Article 4.) Such inspection record shall be readily available for examination by the Safety Director or his authorized representative during business hours. All initial inspections (first installation or first registration) shall be accomplished by a State of Utah Inspector.

(f) File a statement annually, on a date mutually agreed upon with the Safety Director. Such statement shall be signed by the individual having supervision over the inspections made during the period covered. The Statement shall include all vessels covered by the Act, identified by their state numbers, inspected during the year, and a certificate that each such inspection was conducted pursuant to the inspection requirements provided for by the Act. Such annual statement shall be accompanied by a filing fee in accordance with the schedule as follows:

1. For statements covering not more than twenty-five vessels--five (\$5.00) dollars per vessel;
2. For statements covering more than twenty-five but less than one hundred—on hundred (\$100.00) dollars;
3. For statements covering more than one hundred but less than five hundred—two hundred (\$200.00) dollars;
4. For statements covering more than five hundred vessels—four hundred (\$400.00) dollars.

#### **16. EXEMPTIONS**

These rules shall not apply to the following boilers and pressure vessels:

(a) Boilers subject to inspection, control or regulation under or pursuant to the terms of any law or regulation of the

U.S. Government or any of its agencies.

(b) **PRESSURE VESSELS** used for the transportation of compressed gases if constructed and operated in compliance with specification and regulations of the United States Department of Transportation.

(c) **PRESSURE VESSELS** containing air located on vehicles operating pursuant to regulations of other jurisdictional authorities.

(d) **PRESSURE VESSELS** having an internal or external operating pressure not exceeding 15 psig with no limit on size.

(e) **PRESSURE VESSELS** having an inside diameter not exceeding 6 in. (152 mm) with no limitation on pressure.

(f) **PRESSURE VESSELS** containing water under pressure, including those containing air, the compression of which serves only as a cushion, when none of the following limitations are exceeded:

(1) a design pressure of 300 psi;

(2) a design temperature of 210°F;

(g) **PRESSURES VESSELS** containing water heated by steam or any other indirect means when none of the following limitations is exceeded:

(1) a heat input of 200,000 btu/hr.

(2) a water temperature of 210 degrees F;

(3) a water-containing capacity of 120 gallons.

(h) **COIL TYPE HOT WATER BOILERS** without any steam space and where no steam is generated within the coil but where the water flashes into steam when released through a manually operated nozzle, unless one of the following limitations is exceeded:

(1) 3/4 in. nominal diameter tubing or pipe size with no drum or headers attached.

(2) 6 gallons nominal water-containing capacity.

(3) 350 degrees F water temperature.

(i) **HOT WATER SUPPLY BOILERS, WATER HEATERS, INCLUDING LINED POTABLE WATER HEATER** when none of the following limitations are exceeded:

(1) a heat input of 200,000 Btu/hr.

(2) a water temperature of 210 degrees F.

(3) a water-containing capacity of 120 gallons.



(j) **PRESSURE VESSELS** which may be classified as:

- (1) Pressure containers which are integral parts of components of rotating or reciprocating mechanical devices such as pumps, compressors, turbines, generators, engines and hydraulic or pneumatic cylinders where the primary design considerations and/or stresses are derived from the functional requirements of the device, or
- (2) Structures whose primary function is the transport of fluids from one location to another within a system of which it is an integral part, that is, piping systems.

(k) **BOILERS AND PRESSURE VESSELS** located in a private residence or in an apartment house with less than 5 family units.

#### **17. DEFECTIVE CONDITIONS DISCLOSED AT TIME OF EXTERNAL INSPECTION**

If, upon an external inspection, there is evidence of a leak or crack, sufficient covering of the boiler or pressure vessel shall be removed to permit the inspector to satisfactorily determine the safety of the boiler or pressure vessel. If the covering cannot be removed at that time, he may order the operation of the boiler or pressure vessel stopped until such time as the covering can be removed and proper examination made.

#### **18. OWNER OR USER TO NOTIFY SAFETY DIRECTOR OF ACCIDENT**

When an accident occurs which serves to render a pressure part of a boiler or pressure vessel inoperative, the owner or user shall notify the Safety Director or deputy inspector as soon as possible, and submit a detailed report of the accident. In case of a serious accident, such as in a personal injury or an explosion, notice shall be given immediately by telephone, telegraph or messenger, and neither the boiler or pressure vessel, nor any parts thereof, shall be removed or disturbed before an inspection has been made by the inspector, except for the purpose of conserving human life and limiting consequential damage.

#### **19. RESTAMPING BOILERS AND PRESSURE VESSELS**

When the stamping on a boiler or pressure vessel becomes indistinct, the inspector shall instruct the owner or user to have it restamped. Request for permission to restamp the boiler or pressure vessel shall be made to the Safety Director and proof of the original stamping shall accompany the request. The Safety Director may grant such authorization. Restamping authorized by the Safety Director shall be done only in the

presence of an inspector, and shall be indential with the original stamping, except that it will not be required to restamp the ASME Code Symbol. Notice of completion of such restamping shall be filed with the Safety Director by the inspector who witnessed the stamping on the boiler or pressure vessel, together with a facsimile of the stamping applied.

#### **20. PENALTY FOR OPERATION OF UNSAFE BOILERS OR PRESSURE VESSELS**

If upon inspection, a boiler or pressure vessel is found to be in such condition that it is unsafe to operate, the inspector shall notify the Safety Director as required in Part II, Article 14 and the Inspection Certificate shall be suspended by the Safety Director. Any person, firm, partnership or corporation causing such objects to continue to be operated shall be subject to the penalty provided by laws.

#### **21. CONDEMNED BOILERS OR PRESSURE VESSELS**

Any boiler or pressure vessel having been inspected and declared unsafe by the Safety Director or State Inspector shall be stamped by the inspector with an arrowhead stamp having an overall length of 1/2-inch and width of 3/8-inch on either side of the letter "XXX" and the letter of the State, as shown by the following facsimile, which will designate a condemned boiler or pressure vessel.

**X X X UTAH X X X**

Any person, firm, partnership, or corporation using or offering for sale condemned boiler or pressure vessel for operation within this State shall be subject to the penalties provided by law.

#### **22. REINSTALLATION OF STANDARD BOILERS OR PRESSURE VESSELS**

If a standard boiler or pressure vessel located in this State is to be moved to another state for temporary use or repair, application shall be made by the owner or user to the Safety Director for permission to reinstall the boiler or pressure vessel in the State.

#### **23. REINSTALLATION OF NONSTANDARD BOILERS OR PRESSURE VESSELS**

A nonstandard boiler or pressure vessel which is moved outside the boundaries of the State cannot be reinstalled in the State. Shipment of nonstandard boilers and pressure vessels into this State for use is prohibited.

## **24. INSTALLATION OF USED OR SECONDHAND BOILERS OR PRESSURE VESSELS**

Before a used or secondhand boiler or pressure vessel can be shipped for installation in this State, an inspection must be made by an inspector qualified by an examination equal to that required by this State or by an inspector holding a National Board Commission, and data submitted by him shall be filed by the owner or user of the boiler or pressure vessel with the Safety Director for his approval. Such boilers and pressure vessels when installed in the State shall be equipped with fittings and appurtenances that comply with the Rules and Regulations for new installations. Such used equipment, prior to entering the State, shall be subject to requirements of Part II, Article 1(a) and (b).

Before bringing used or secondhand boilers or pressure vessels into this State, a legible copy of the original manufacturer's ASME Data Report must be submitted to, and approved by the Safety Director. A legible copy of the ASME data report shall be also submitted to the authorized Code Inspector prior to his inspection of the boiler or pressure vessel.

## **25. REINSTALLED BOILERS OR PRESSURE VESSELS**

When a stationary boiler or pressure vessel is moved and reinstalled, the fittings and appurtenances shall comply with the Rules and Regulations for new installations.

## **26. FACTOR OF SAFETY FOR EXISTING INSTALLATIONS**

Any inspector may increase the factor of safety on any existing installation if the condition of the boiler or pressure vessel warrants it. If the owner or user does not concur with the inspector's decision, the owner or user may appeal to the Commissioner, who may request a joint inspection by the Safety Director and the Deputy Inspector or Special Inspector. Each inspector shall render his report to the Commissioner and the Commissioner shall render the final decision, based upon the data contained in the inspectors reports.

## **27. REPAIRS BY WELDING**

No repair to a boiler or pressure vessel shall be initiated without the authorization of the Inspector who shall satisfy himself that the welding procedures and welders are qualified and that the repair methods are acceptable. All welded repairs shall be reported to this jurisdiction on a National Board R-1 Form, #NB-66.

## **28. REPAIRS AND RENEWALS OF BOILERS FITTINGS AND APPURTENANCES**

Whenever repairs are made to fittings or appurtenances or it becomes necessary to replace them, such repairs or replacements shall comply with the requirements of the ASME Code.

## **29. RIVETED PATCHES**

In applying riveted patches, the design of the patch and method of installation shall be in accordance with the National Board Inspection Code.

## **30. REMOVAL OF SAFETY APPURTENANCES**

No person shall remove, or do any repair work on any safety appurtenances prescribed by these Rules and Regulations while a boiler or pressure vessel is in operation, except for certain boilers and pressure vessels as defined below.

Boiler safety and safety relief valves requiring resetting or other adjustments, may be performed on the boiler only by those holding "VR" Authorization.

Pressure vessel safety and safety relief valves requiring resetting or other adjustment may be performed on pressure vessels only by those holding "VR" Authorization.

Pressure vessels may be operated in accordance with the ASME Code, Section VIII, Division - 1, only after written application and approval has been obtained by the owner or user from the Industrial Commission of Utah, Safety Division, and the Insurance Company, if any.

Should any of these appurtenances be removed for repair during an outage of a boiler or pressure vessel, they must be reinstalled and in proper working order before the object is again placed in service.

## **31. INSPECTION FEES**

The inspection fees to be charged as required by law for the inspection of a boiler or pressure vessel shall be set by the Division. This inspection fee shall be paid by the owner or user. The current schedule of boiler inspection fees follows:

### **Certificate of Inspection:**

All boilers inspected by Insurance Co.	\$ 25.00
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### **Boiler Inspection Fees:**

Pressure Vessels	\$25.00
Boilers to 500 square feet heating surface	\$35.00
Boilers to 2500 square feet heating surface	\$85.00
Boilers 2500+ square feet heating surface	\$95.00

Special inspections will be made at the rate of \$50.00 per hour plus all expenses.

**NOTE: Fee schedule shown above is subject to change by the Division within the limits established by law.**

### **32. APPLICATION OF STATE UNIT NUMBERS**

Upon completion of the installation of a new boiler or at the time of the initial certificate inspection of an existing installation each boiler shall be stamped by the state inspector with a unit number of the State consisting of letters and figures to be not less than 5/16-inch in height and arranged as follows:

U 0000 for Boilers

All cast-iron, low pressure heating boilers shall have securely attached to the front of the boiler a non-corrosive metal tag of not less than 1 inch in height, which shall have the serial number of the State stamped thereon.

### **33. RETURN LOOP CONNECTION**

It is recommended that the return water connections to all low-pressure, steam heating boilers supplying a gravity return heating system be so arranged as to form what is known as the "return pipe loop connection", so that the water cannot be forced out of the boiler below the safe water level. This connection is shown in the ASME code Section IV.

### **34. EXIT FROM BOILER ROOM**

All boiler rooms exceeding 500 square feet floor area or containing one or more boilers having a total fuel burning capacity of 1,000,000 BTU per hour or more, or the equivalent of electrical heat input, shall have at least two (2) means of exit. Each exit shall be remotely located from the other. Each elevation in such boiler room shall have two (2) means of exit, each remotely located from the other.

### **35. SUGGESTIONS FOR OPERATION**

It is recommended that the ASME Code, Section VI, Recommended Rules for Care of Heating Boilers, and Section VII, Recommended Rules for Care of Power Boilers be used as a guide for proper and safe operating practices.

### **36. GAS BURNERS**

For installations which are gas-fired, the burners used shall conform to the requirements of the ANSI/ASME CSD-1, **Controls and Safety Devices for Automatically Fired Boilers**, and/or the National Fire Protection Association.

### **37. BLOWOFF EQUIPMENT**

The blowdown from a boiler or boilers that enters a sewer

system or blowdown which is considered a hazard to life and/or property shall pass through some form of blowoff equipment that will reduce pressure and temperature to safe limits. Such equipment shall conform to the provisions set forth in the National Board and Pressure Vessel Inspectors' publication, "Boiler Blowoff Equipment".

## **PART III — EXISTING INSTALLATIONS**

### **SECTION 1 — POWER AND HIGH PRESSURE, HIGH-TEMPERATURE WATER BOILERS**

#### **AGE LIMIT OF EXISTING BOILERS**

(a) The age limit of any boiler of nonstandard construction, installed prior to May 1967 shall be thirty (30) years, except that, after a thorough internal and external inspection, and a hydrostatic pressure test of 1 1/2 times the allowable working pressure and held for a period of at least thirty (30) minutes, during which time no distress or leakage develops, any boiler having other than a riveted, longitudinal, lap joint may be continued in operation without reduction in working pressure. The age limit of any boiler having riveted, longitudinal, lap joints and operating at a pressure in excess of 50 psi shall be twenty (20) years. This type of boiler, when removed from an existing setting, shall not be reinstalled for a pressure in excess of 15 psi. A reasonable time for replacement, not to exceed one year, may be given at the discretion of the Safety Director.

(b) The shell or drum of a boiler in which a typical "lap seam crack" is discovered along a longitudinal riveted joint shall be permanently discontinued for use under steam pressure. By "lap seam crack" is meant the typical crack frequently found in lap joints extending parallel to the longitudinal joint and located either between or adjacent to rivet holes.

(c) The age limit of boilers of standard construction, installed prior to May 1967 shall be determined from the results of a thorough internal and external inspection by an inspector and the application of an appropriate pressure test. Hydrostatic test pressure shall be a 1 1/2 times the allowable working pressure and maintained for thirty (30) minutes. The boiler may be continued in service at the same working pressure provided there is no evidence of leakage or distress under these test conditions.

#### **2. MAXIMUM ALLOWABLE WORKING PRESSURE FOR STANDARD BOILERS**

The maximum allowable working pressure for standard boilers shall be determined in accordance with the applicable provisions of the edition of the ASME Code under which they were constructed and stamped.

#### **3. MAXIMUM ALLOWABLE WORKING PRESSURE FOR NON-STANDARD BOILERS**

(a) The maximum allowable working pressure on the shell

of a nonstandard boiler shall be determined by the strength of the weakest section of the structure, computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint or tube ligaments, the inside diameter of the weakest course and the factor of safety allowed by these rules and regulations.

$$\frac{TS \ t \ E}{RFS} = \text{maximum allowable working pressure, psig}$$

where:

TS = maximum allowable tensile strength of shell plates, psi

t = minimum thickness of shell plate, in weakest course, inches

E = efficiency of longitudinal joint

For tube ligaments and riveted construction, E, shall be determined by the rules given in the ASME Section I, Part PR. For seamless construction, E shall be considered 100 percent.

R = inside radius of the weakest course of the shell, in inches

FS = factor of safety permitted

(b) **TENSILE STRENGTH.** When tensile strength of steel or wrought iron shell plates is not known, it shall be taken as 45,000 psi.

(c) **FACTORS OF SAFETY.** The following factors of safety shall be increased by the inspector if the condition and safety of the boiler demand it:

The lowest factor of safety permissible on existing installations shall be 4.5, except for horizontal-return-tubular boilers having continuous longitudinal lap seams more than 12 feet in length, then the factor of safety shall be 8. When this latter type of boiler is removed from its existing setting, it shall not be installed for pressures in excess of 15 psig.

Reinstalled or secondhand boilers shall have a minimum factor of safety of 6, when the longitudinal seams are of lap-riveted construction, and a minimum factor of safety of 5, when the longitudinal seams are of butt- and double-strap construction.

#### **4. CAST IRON HEADERS AND MUD DRUMS**

The maximum allowable working pressure on a water-tube boiler, the tubes of which are secured to cast-iron or malleable-iron headers, or which have cast-iron mud drums, shall not exceed 160 psig.



## **5. PRESSURE ON CAST-IRON BOILERS**

The maximum allowable working pressure for any cast-iron boiler, except hot-water boilers, shall be 15 psig.

### **6. SAFETY VALVES**

(a) The use of weighted-lever safety valves, or safety valves having either the seat or disk of cast iron, shall be prohibited after these regulations become effective. Valves of this type or construction shall be replaced by direct, spring-loaded, pop-type valves that conform to the requirements of the ASME Code, Section I.

(b) Each boiler shall have at least one safety valve, and if it has more than 500 square feet of water-heating surface, or an electric power input of more than 1 100 kw, it shall have two or more safety valves.

(c) The valve or valves shall be connected to the boiler, independent of any other steam connection, and attached as close as possible to the boiler, without unnecessary intervening pipe or fittings. Where alteration is required to conform to this requirement, owners or users shall be allowed reasonable time in which to complete the work.

(d) No valves of any description shall be placed between the safety valve and the boiler nor on the discharge pipe. When a discharge pipe is used, it shall be at least full size of the safety-valve discharge and fitted with an open drain to prevent water lodging in the upper part of the safety valve or discharge pipe. When an elbow is placed on a safety valve discharge pipe, it shall be anchored and supported securely. All safety-valve discharges shall be so located or piped as to be carried clear from walkways or platforms.

(e) The safety-valve capacity of each boiler shall be such that the safety valve or valves will discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than 6 percent above the highest pressure to which any valve is set and in no case to more than 6 percent above the maximum allowable working pressure.

(f) One or more safety valves on every boiler shall be set at or below the maximum allowable working pressure. The remaining valves may be set within a range of 3 percent above the maximum allowable working pressure, but the range of setting of all the safety valves on a boiler shall not exceed 10 percent of the highest pressure to which any valve is set.

(g) When two or more boilers, operating at different

pressures and safety-valve settings, are interconnected, the lower pressure boilers or interconnected piping shall be equipped with safety valves of sufficient capacity to prevent overpressure, considering the maximum generating capacity of all boilers.

(h) In those cases where the boiler is supplied with feedwater directly from water mains without the use of feeding apparatus (not to include return traps), no safety valve shall be set at a pressure higher than 94 percent of the lowest pressure obtained in the supply main feeding the boiler.

(i) The relieving capacity of the safety valves on any boiler shall be checked by one of the three following methods and, if found to be insufficient, additional valves shall be provided:

(1) By making the accumulation test, which consists of shutting off all other steam-discharge outlets from the boiler and forcing the fires to the maximum. The safety-valve capacity shall be sufficient to prevent a rise of pressure in excess of 6 percent of the maximum allowable working pressure. This method should not be used on a boiler with a superheater or reheater.

(2) By measuring the maximum amount of fuel that can be burned and computing the corresponding evaporative capacity (steam-generating capacity) upon the basis of the heating value of this fuel. These computations shall be as outlined in the Appendix of the ASME Code, Section I.

(3) By measuring the maximum amount of feedwater that can be evaporated.

When either of the methods outlined in (2) or (3) is employed, the sum of the safety-valve capacities shall be equal to or greater than the maximum evaporative capacity (maximum steam-generating capacity) of the boiler.

(j) The relieving capacity of safety valves for forced-flow steam generators shall be in accordance with the requirements of the ASME Code, Section I.

## **7. BOILER FEEDING**

Each boiler shall have a feed supply which will permit it to be fed at any time while under pressure.

A boiler having more than 500 square feet of water-heating surface shall have at least two means of feeding, one of which shall be an approved feed pump, injector or inspirator. A source of feed directly from water mains at a pressure 6 percent greater than the set pressure of the safety valve with the highest setting may be considered one of the means. As provided for in the ASME Code, Section I, boilers fired by gaseous, liquid, or

solid fuel in suspension may be equipped with a single means of feeding water provided means are furnished for the immediate shutoff of heat input if the water feed is interrupted.

The feedwater shall be introduced into the boiler in such manner that it will not be discharged close to riveted joints of shell or furnace sheets, or directly against surfaces exposed to products of combustion, or to direct radiation from the fire.

The feed piping to the boiler shall be provided with a check valve near the boiler and a valve cock between the check valve and the boiler. When two or more boilers are fed from a common source, there shall also be a valve on the branch to each boiler between the check and source of supply. Whenever a globe valve is used on feed piping, the inlet shall be under the disk of the valve.

Where deaerating heaters are not employed, it is recommended that the temperature of the feedwater be not less than 120 degrees F. to avoid the possibility of setting up localized stress.

Where deaerating heaters are employed, it is recommended the minimum feedwater temperature be not less than 215 degrees F., so that dissolved gases may be thoroughly released.

#### **8. WATER LEVEL INDICATORS**

No outlet connections (except for damper, regulator, feedwater regulator, low-water fuel cutout, drain, steam gages, or such apparatus that does not permit the escape of an appreciable amount of steam or water therefrom) shall be placed on the piping that connects the water column to the boiler. The water column shall be provided with a valved drain of at least 3/4-inch pipe size, the drain to be piped to a safe location.

Each boiler shall have three or more gage cocks located within the visible length of the water glass, except when the boiler has two water glasses located on the same horizontal lines. Boilers not over 36 inches in diameter, in which the heating surfaces does not exceed 100 square feet, need have but two gage cocks.

For all installations where the water gage glass or glasses are more than 30 feet above the boiler operating floor, it is recommended that remote water-level indicating or recording gages be installed at eye height above the operating floor.

#### **9. STEAM GAGES**

Each steam boiler shall have a steam gage, with dial range not less than 1 1/2 times the maximum allowable working pressure, connected to the steam space or to the steam connection.

to the water column. The steam gage shall be connected to a siphon or equivalent device of sufficient capacity to keep the gage tube filled with water and so arranged that the gage cannot be shut off from the boiler except by a cock placed near the gage and provided with a tee or lever handle arranged to be parallel to the pipe in which it is located when the cock is open.

When a steam gage connection longer than 8 feet becomes necessary, shutoff valve may be used near the boiler provided the valve is of the outside-screw-and-yoke type and is locked open. The line shall be of ample size with provision for free blowing.

Each boiler shall be provided with a connection and suitable valving which connects to the steam space of each boiler for the exclusive purpose of attaching a test gage when the boiler is in service so that accuracy of the boiler steam gage may be ascertained.

#### **10. STOP VALVES**

Except for a single-boiler, prime-mover installation, each outlet from a boiler (except safety-valve and water column connections) shall be fitted with a stop valve located as close as practicable to the boiler.

In a single-boiler, prime-mover installation the steam stop valve may be omitted provided the prime-mover throttle valve is equipped with an indicator to show whether the valve is open or closed and is designed to withstand the required hydrostatic pressure test of the boiler.

When a stop valve is so located that water can accumulate, ample drains shall be provided. The drainage shall be piped to a safe location and shall not be discharged on the top of the boiler or its setting.

When two or more boilers provided with manholes are connected to a common header, the connection from each boiler shall be fitted with two stop valves having an ample free-blow drain between them. The discharge of the drain shall be visible to the operator while manipulating the valves and shall be piped clear of the boiler setting. The stop valves shall consist preferably of one automatic nonreturn valve (set next to the boiler) and a second valve of the outside-screw-and-yoke type.

#### **11. BLOWOFF CONNECTION**

The construction of the setting around each blowoff pipe shall permit free expansion and contraction. Careful attention shall be given to the problem of sealing these setting openings without restricting the movement of the blowoff piping.

All blowoff piping, when exposed to furnace heat, shall be protected by firebrick or other heat-resisting material, so constructed that the piping may be inspected readily.

Each boiler shall have a blowoff pipe, fitted with a valve or cock, in direct connection with the lowest water space. Cocks shall be of the gland or guard type and suitable for the pressure allowed. The use of globe valves shall not be permitted. When the maximum allowable working pressure exceeds 100 psig, each blowoff pipe shall be provided with two valves or a valve and cock.

Blowoff piping shall comply with the requirements of the ASME Code, Section I, from the boiler to the valve or valves, and shall be run full size without use of reducers or bushings. The piping shall not be galvanized.

All fittings between the boiler and blowoff valve shall be of steel. In case of renewal of blowoff pipe or fittings, they shall be installed in accordance with the rules and regulations for new installations of the ASME Code, Section I, A56-A60.

#### **12. REPAIRS AND RENEWALS OF BOILER FITTINGS AND APPURTENANCES**

Whenever repairs are made to fittings or appurtenances or it becomes necessary to replace them, such repairs or replacements shall comply with the latest requirements of the ASME Code, Section I and the National Board Inspection Code.

#### **13. RECOMMENDATIONS FOR OPERATION**

It is recommended that ASME Code, Section VII, covering Recommended Rules for the Care of Power Boilers be used as a guide for proper and safe operating practices.

#### **14. CONDITIONS NOT COVERED BY THESE REQUIREMENTS**

All cases not specifically covered by these requirements shall be treated as new installations or may be referred to the Safety Director for instruction concerning the requirements.

### **SECTION 2 — HEATING BOILERS**

#### **1. STANDARD BOILERS**

The maximum allowable working pressure of standard boilers shall in no case exceed the pressure indicated by the manufacturer's identification stamped or cast on the boiler or on a plate secured to it.

## **2. NONSTANDARD RIVETED BOILERS**

The maximum allowable working pressure on the shell of a nonstandard riveted heating boiler shall be determined in accordance with Part III, Section I, Article 3, covering Existing Installations, Power Boilers, except that in no case shall the maximum allowable working pressure of a steam heating boiler exceed 15 psig, or a hot-water boiler exceed 160 psig or 250 degrees F. temperature.

## **3. NONSTANDARD WELDED BOILERS**

The maximum allowable working pressure of a nonstandard steel or wrought iron heating boiler of welded construction shall not exceed 15 psig for steam. For other than steam service, the maximum allowable working pressure shall be calculated in accordance with ASME Code, Section IV.

## **4. NONSTANDARD CAST-IRON BOILERS**

The maximum allowable working pressure of a nonstandard boiler composed principally of cast iron shall not exceed 15 psig for steam service or 30 psig for hot-water service.

The maximum allowable working pressure of a non-standard boiler having cast iron shell or heads and steel or wrought iron tubes shall not exceed 15 psig for steam service or 30 psig for hot-water service.

## **5. SAFETY VALVES**

(a) Safety valves of the top discharge type shall not be permitted in this state for new installations or replacements.

(b) Each steam boiler shall have one or more officially rated safety valves of the spring pop type adjusted to discharge at a pressure not to exceed 15 psig. Seals shall be attached in a manner to prevent the valve from being taken apart without breaking the seal. The safety valves shall be arranged so that they cannot be reset to relieve at a higher pressure than the maximum allowable working pressure of the boiler. A body drain connection below seat level shall be provided by the manufacturer and this drain shall not be plugged during or after field installation. For valves exceeding 2 inch pipe size, the drain hole or holes shall be tapped not less than 3/8-inch pipe size. For valves less than 2 inches, the drain hole shall not be less than 1/4-inch diameter.

(c) No safety valve for a steam boiler shall be smaller than 3/4-inch unless the boiler and radiating surfaces consist of a self-contained unit. No safety valve shall be larger than 4 1/2 inches. The inlet opening shall have an inside diameter equal

to, or greater than the seat diameter.

(d) The minimum relieving capacity of the valve or valves shall be governed by the capacity marking on the boiler.

(e) The minimum valve capacity in pounds per hour shall be the greater of that determined by dividing the maximum BTU output at the boiler nozzle obtained by the firing of any fuel for which the unit is installed by 1000, or shall be determined on the basis of the pounds of steam generated per hour per square foot of boiler heating surfaces as given in Table HG-400.1. In many cases a greater relieving capacity of valves will have to be provided than the minimum specified by these rules. In every case, the requirements of HG 400.1 shall be met

**TABLE HG 400.1**  
Minimum Pounds of Steam per Hour  
per Square Foot of Heating Surface

<b>Boiler Heating Surface:</b>	<b>Firetube Boilers</b>	<b>Watertube Boilers</b>
Hand fired	5	6
Stoker fired	7	8
Oil, gas, or pulverized fuel fired	8	10
<b>Waterwall Heating Surface:</b>		
Hand fired	8	8
Stoker fired	10	12
Oil gas, or pulverized fuel fired	14	16

**NOTES:**

1. When a boiler is fired only by a gas giving a heat value not in excess of 200 BTU per cu. ft., the minimum safety valve or safety relief valve relieving capacity may be based on the value given for handfired boilers above

2. The minimum safety valve or safety relief valve relieving capacity for electric boilers shall be 3 1/2 pounds per hour per kilowatt input

3. For heating surface determination see ASME Code, Section IV.

(f) The safety valve capacity for each steam boiler shall be such that with the fuel burning equipment installed, and operated at maximum capacity, the pressure cannot rise more than 5 psi above the maximum allowable working pressure.

(g) When operating conditions are changed, or additional boiler surface is installed, the valve capacity shall be increased, if necessary, to meet the new conditions and be in accordance

with (e) and (f). The additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.

(h) If there is any doubt as to the capacity of the safety valve, an accumulation test shall be run (see ASME Code, Section VI, Care of Heating Boilers).

(i) No valve of any description shall be placed between the safety valve and the boiler, nor on the discharge pipe between the safety valve and the atmosphere. The discharge pipe shall be at least full size and be fitted with an open drain to prevent water lodging in the upper part of the safety valve or in the discharge pipe. When an elbow is placed on the safety discharge pipe, it shall be located close to the safety valve outlet or the discharge pipe shall be securely anchored and supported. All safety valve discharges shall be so located or piped as not to endanger persons working in the area.

## **6. SAFETY RELIEF VALVE REQUIREMENTS FOR HOT WATER BOILERS**

(a) Each hot water heating boiler shall have at least one officially rated (ASME approved and National Board rated) safety relief valve set to relieve at or below the maximum allowable working pressure of the boiler. Each hot water supply boiler shall have at least one officially rated safety relief valve of the automatic reseating type set to relieve at or below maximum allowable working pressure of the boiler. Safety relief valves officially rated as to capacity shall have pop action when tested by steam. When more than one safety relief valve is used on either hot heating or hot water supply boilers, the additional valve or valves shall be officially rated and may be set within a range not to exceed 6 psi above the maximum allowable working pressure of the boiler up to and including 60 psig and 10 percent for those having a maximum allowable working pressure exceeding 60 psig. Safety relief valves shall be spring loaded. Safety relief valves shall be so arranged that they cannot be reset at a higher pressure than the maximum permitted by this paragraph.

(b) No materials liable to fail due to deterioration or vulcanization when subject to saturated steam temperature corresponding to capacity test pressure shall be used for any part.

(c) No safety relief valve shall be smaller than 3/4-inch nor larger than 4 1/2-inch standard pipe size, except that boilers having a heat input not greater than 15,000 BTU per hour may be equipped with a rated safety relief valve of 1/2-inch standard pipe size. The inlet opening shall have an inside diameter ap-



proximately equal to, or greater than, the seat diameter. In no case shall the maximum opening through any part of the valve be less than 1/2-inch diameter or its equivalent area.

(d) The required steam relieving capacity, in pounds per hour, of the pressure relieving device or devices on a boiler shall be the greater of that determined by dividing the maximum output in BTU at the boiler outlet obtained by the firing of any fuel for which the unit is installed by 1000, or on the basis of pounds of steam generated per hour per square foot of boiler heating surface as given in Table HG 400.1. In many cases a greater relieving capacity of valves will have to be provided than the minimum specified by these rules. In every case, the requirements shall be met.

(e) When operating conditions are changed, or additional boiler heating surface is installed, the valve capacity shall be increased, if necessary to meet the new conditions and shall be in accordance with (f). The additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.

(f) Safety relief valve capacity for each boiler shall be such that, with the fuel burning equipment installed and operated at maximum capacity the pressure cannot rise more than 6 psi, above the maximum allowable working pressure for pressure up to and including 60 psig and 10 percent of maximum allowable working pressures over 60 psig.

(g) If there is any doubt as to the capacity of the safety relief valve, an accumulation test shall be run (see ASME Code, Section VI, Care of Heating Boilers).

(h) No valve of any description shall be placed between the safety relief valve and the boiler, nor on the discharge pipe between the safety relief valve and the atmosphere. The discharge pipe shall be at least full size and fitted with an open drain to prevent water lodging in the upper part of the safety relief valve or in the discharge pipe. When an elbow is placed on the safety relief valve discharge pipe, it shall be located close to the safety relief valve outlet or the discharge pipe shall be securely anchored and supported. All safety relief valve discharges shall be so located or piped as not to endanger persons working in the area.

## **7. VALVE REPLACEMENT**

Safety valves and safety relief valves requiring repairs shall be replaced with a new valve or repaired by the manufacturer or his authorized representative.

## **8. PRESSURE RELIEVING DEVICES**

Boilers and fired storage water heaters exempt in Part I, Article 6 shall be equipped with pressure relieving devices in accordance with the requirements of the ASME Code, Section IV.

## **9. INSTRUMENTS, FITTINGS AND CONTROL REQUIREMENTS**

Instruments, fittings and controls for each boiler installation shall comply with the requirements of the ASME Code, Section IV.

## **10. LOW WATER FUEL CUTOFF**

(a) It is required that each newly automatically fired hot water heating boiler with heat input greater than 400,000 BTU/hr. have an automatic low water fuel cutoff with manual reset which has been designed for hot water service, so located as to automatically cut off the fuel supply when the surface of the water falls to the level established in Paragraph (b); (Also, see the ASME Code, Section IV.)

(b) As there is no normal water line to be maintained in a hot water heating boiler, any location of the low water fuel cutoff above the lowest safe permissible water level established by the boiler manufacturer is satisfactory.

(c) A coil type boiler or water tube boiler with heat input greater than 400,000 BTU/hr. requiring forced circulation, to prevent overheating of the coils or tubes, shall have a flow sensing device installed in the outlet piping, in lieu of the low water fuel cutoff required in Para.(a), to automatically cut off the fuel supply when the circulating flow is interrupted.

## **11. STEAM GAGES**

Each steam boiler shall have a steam gage connected to its steam space, its water column, or its steam connection, by means of a siphon or equivalent device exterior to the boiler. The siphon shall be of sufficient capacity to keep the gage tube filled with water and so arranged that the gage cannot be shut off from the boiler except by a cock with a tee or lever handle placed in the pipe near the gage. The handle of the cock shall be parallel to the pipe in which it is located when the cock is open.

The range of the scale on the dial of a steam boiler steam gage shall be not less than 30 psi. The gage shall be provided with effective stops for the indicating pointer at the zero point and at the maximum pressure point. The travel of the pointer from zero to 30 psi pressure shall be at least 3 inches.

## **12. PRESSURE OR ALTITUDE GAGES**

Each hot-water boiler shall have a pressure or altitude gage connected to it or to its flow connection in such a manner that it cannot be shut off from the boiler except by a cock with tee or lever handle placed on the pipe in which it is located when the cock is open.

The range of the scale on the dial of the pressure or altitude gage shall be graduated approximately to not less than 1 1/2 nor more than three times the pressure at which the safety relief valve is set.

## **13. THERMOMETERS**

Each hot water boiler shall have a thermometer so located and connected that it shall be easily readable when observing the water pressure or altitude gage. The thermometer shall be so located that it will at all times indicate the temperature in degrees Fahrenheit or Centigrade of the water in the boiler at or near the outlet.

## **14 WATER GAGE GLASSES**

Each steam boiler shall have one or more water gage glasses attached to the water column or boiler by means of valved fittings. The lower fitting shall be provided with a drain valve of the straightway type with opening not less than 1/4-inch diameter to facilitate cleaning. Gage glass replacement shall be possible while the boiler is under pressure.

Transparent material, other than glass, may be used for the water gage provided that the material has proved suitable for the pressure, temperature and corrosive conditions encountered in service.

## **15. STOP VALVES AND CHECK VALVES**

If a boiler can be closed off from the heating system by closing a steam stop valve, there shall be a check valve in the condensate return pipe between the boiler and the system.

If any part of a heating system can be closed off from the remainder of the system by closing a stop valve, there shall be a check valve in the condensate return pipe from that of the system.

When two or more boilers provided with manholes are connected to a common header, the connection from each boiler shall be fitted with two stop valves having an ample free-blow drain between them. The discharge of the drain shall be visible to the operator while manipulating the valves and shall be piped clear of the boiler setting. The stop valves shall consist

preferably of one automatic nonreturn valve (set next to the boiler) and a second valve of the outside-screw-and-yoke type.

#### **16. FEEDWATER CONNECTIONS**

Feedwater, make-up water, or water treatment shall be introduced into a boiler through the return piping system or through an independent feedwater connection which does not discharge against parts of the boiler exposed to direct radiant heat from the fire. Feedwater, make-up or water treatment shall not be introduced through openings or connections provided for inspection or cleaning, safety valve, safety relief valve, surface blowoff, water column, water gage glass, pressure gage or temperature gage.

Feedwater piping shall be provided with a check valve near boiler and a stop valve or cock between the check valve and the boiler or return pipe system.

Where one or more boiler returns are fed back to the boiler by gravity, there shall be a check valve and stop valve in each return line, the stop valve to be placed between the boiler and the check valve, and both shall be located as close to the boiler as is practicable. It is recommended that no stop valves be placed in the supply and return pipe connections of a single boiler installation.

#### **17. RETURN PUMP**

Each boiler equipped with a condensate return pump, where practicable, shall be provided with a water level control arranged to automatically maintain the water level in the boiler within the range of the gage glass.

#### **18. REPAIRS AND RENEWALS OF BOILER FITTINGS AND APPURTENANCES**

Whenever repairs are made to fittings or appurtenances, or it becomes necessary to replace them, such repairs or replacements shall comply with the ASME Code, Section IV for new construction.

#### **19. CONDITIONS NOT COVERED BY THESE REQUIREMENTS**

All cases not specifically covered by these requirements shall be treated as new installations or may be referred to the Safety Director for instructions concerning the requirements.

## SECTION 3 — PRESSURE VESSELS

### 1. MAXIMUM ALLOWABLE WORKING PRESSURE FOR STANDARD PRESSURE VESSELS

The maximum allowable working pressure for standard pressure vessels shall be determined in accordance with the applicable provisions of the edition of the ASME Code under which they were constructed and stamped.

### 2. MAXIMUM ALLOWABLE WORKING PRESSURE FOR NON-STANDARD PRESSURE VESSELS

(a) FOR INTERNAL PRESSURE. The maximum allowable working pressure on the shell of a non-standard pressure vessel shall be determined by the strength of the weakest course computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint, the inside diameter of the weakest course and the factor of safety set by the these rules.

$$\frac{TStE}{RFS} = \text{maximum allowable working pressure, psi:}$$

where:

- TS = maximum allowable tensile strength of shell plate, psi.  
When the tensile strength of the steel plate is not known, it shall be taken as 45,000 psi for temperatures not exceeding 400 degrees F.
- t = minimum thickness of shell plate of weakest course, inches.
- E = efficiency of longitudinal joint depending upon construction.

Use the following values:

For fusion-welded joints:

	Percent
Single lap weld .....	40
Double lap weld .....	60
Single butt weld .....	60
Double butt weld .....	75
Forge weld .....	70
Brazed steel .....	80

R = inside radius of weakest course of shell, inches, provided the thickness does not exceed 10 percent of the radius.

If the thickness is over 10 percent of the radius, the outer radius shall be used.

FS = factor of safety allowed by these rules.

For riveted joints, calculate riveted efficiency in accordance with the 1971 ASME Code, Section VIII.

(b) **FOR EXTERNAL PRESSURE.** The maximum allowable working pressure for cylindrical non-standard pressure vessels subjected to external or collapsing pressure shall be determined by the rules in the ASME Code, Section VIII, Div. 1.

(c) **FACTORS OF SAFETY.** The minimum factor of safety shall in no case be less than four (4) for existing installations. The factor of safety may be increased when deemed necessary by the inspector to insure the operation of the vessel within safe limits. The condition of the vessel and the particular service to which it is subject will be the determining factors.

(d) **END CLOSURES.** The maximum allowable working pressure permitted for formed heads under pressure shall be determined by using the appropriate formulas from the ASME Code, Section VIII, Div. 1.

### **3. INSPECTION OF INACCESSIBLE PARTS**

Where in the opinion of the inspector, as the result of conditions disclosed at the time of inspection, it is advisable to remove the interior or exterior lining, covering, or brickwork to expose certain parts of the vessel not normally visible, the owner or user shall remove such materials to permit proper inspection and to establish construction details. Metal thickness shall be determined utilizing appropriate equipment including drilling if necessary.

### **4. PRESSURE RELIEF DEVICES**

Pressure relief devices for each pressure vessel installation shall comply with the requirements of the code to which the vessel was constructed.

### **5. SAFETY APPURTENANCES**

Each pressure vessel shall be protected by such safety and relief valves and indicating and controlling devices as will insure its safe operation. These valves and devices shall be so constructed, located, and installed so they cannot readily be rendered inoperative. The relieving capacity of the safety valves shall be in accordance with the applicable codes. Safety valve discharges shall be carried to a safe place.

**6. REPAIRS AND RENEWALS OF FITTINGS AND APPURTENANCES**

Whenever repairs are made to fittings or appurtenances, or it becomes necessary to replace them, such repairs or replacements shall comply with the ASME Code.

**7. AIR COMPRESSOR UNITS MOUNTED ON AIR PRESSURE VESSELS**

It is preferred that all electric motor driven air compressors above 7.5 H.P. have the motor and compressor unit separately mounted off the air vessel. The air vessel should not be exposed to any stress, strain or vibration from the air compressing unit.

**8. CONDITIONS NOT COVERED BY THESE REQUIREMENTS**

All cases not specifically covered by these requirements shall be treated as new installations or may be referred to the Safety Director for instructions concerning the requirements.

## **PART IV - GENERAL REQUIREMENTS**

### **1. INSPECTION OF BOILERS AND PRESSURE VESSELS**

All boilers and pressure vessels, not exempt by the Act, shall be inspected internally and externally, as provided by these Rules and Regulations, by an inspector. The owner or user shall prepare each boiler or pressure vessel for such inspection and for appropriate pressure tests, whenever necessary. Following is a recommended general guide in preparing equipment for an internal inspection:

#### **(a) BOILERS**

- (1) Cool the boiler, furnace and setting sufficiently to prevent damage to any part.
- (2) Drain and wash thoroughly internal parts to be inspected.
- (3) Remove manhole and handhold plates, and wash out, drain inspection plugs.
- (4) Remove a sufficient number of grates of internally fired boilers, as requested by the inspector.
- (5) Remove brickwork, refractory and insulation, as required by the inspector, to determine condition of boiler, headers, tubes, furnace, structural supports, and other parts.
- (6) Prevent leakage of water, steam or vapors into boiler interiors that would endanger personnel.
- (7) Before opening the manhole or handhole covers and entering any parts of the steam-generating unit connected to a common header with other boilers, the non return and steam stop valves must be closed, tagged, and preferably padlocked, and drain valves or cocks between the two valves opened. The feed and check valves must be closed and the drain valve between the two valves opened. After draining the boiler, the blowoff valves shall be closed and padlocked. Blowoff lines, where practicable, shall be disconnected between pressure parts and valves. All drains and vent lines shall be opened.
- (8) Prepare the pressure gage for testing.

#### **(b) PRESSURE VESSELS**

- (1) Remove manhole and handhold plates, cleaning and inspection plugs.



- (2) Clean internal surfaces and adequately ventilate all interior spaces.
- (3) Isolate the unit to the extent that internal temperature, pressure and environment are not injurious to personnel and are under strict control during complete inspection.
- (4) Remove linings or coverings as required by the inspector, to determine true physical condition of the vessel and its components.
- (5) Make protective and regulating controls readily accessible for inspection.
- (6) Prepare the pressure gages for testing.

## **2. BOILERS AND PRESSURE VESSELS IMPROPERLY PREPARED FOR INSPECTION**

If a boiler or pressure vessel has not been properly prepared for an internal inspection, or if the owner or user fails to comply with the requirements for a hydrostatic test as set forth in these Rules and Regulations, the inspector may decline to make the inspection or test and the inspection certificate shall be withheld until the owner or user complies with the requirements.

## **3. REMOVAL OF COVERING TO PERMIT INSPECTION**

If the boiler or pressure vessel is jacketed so that the seams of shells, drums, or domes cannot be seen, sufficient jacketing, setting wall, or other form of casing or housing shall be removed to permit reasonable inspection of the seams and so that the size of the rivets, pitch of the rivets, and other data necessary to determine the safety of the boiler or pressure vessel may be obtained, provided such information cannot be determined by other means.

## **4. LAP-SEAM CRACK**

The shell of a pressure vessel, in which a lap-seam crack is discovered along a longitudinal riveted joint, shall be immediately discontinued from use. If the equipment is not more than 15 years of age, a complete new course of the original thickness may be installed at the discretion of the inspector and after approval by the Safety Director. Patching is prohibited. (by "lap-seam crack" is meant the typical crack frequently found in lap seams, extending parallel to the longitudinal joint and located between or adjacent to rivet holes.)

## **5. HYDROSTATIC PRESSURE TESTS**

A hydrostatic pressure test, when applied to boiler or pressure vessels, shall not exceed 1 1/2 times the maximum

allowable working pressure. The pressure shall be under proper control so that in no case shall the required test pressure be exceeded by more than 2 percent.

During a hydrostatic test involving pressures in excess of the lowest safety valve setting, the safety valve or valves shall be removed or each valve disk shall be held to its seat by means of a testing clamp and not by screwing down the compression screw upon the spring.

Other safety devices that may be damaged shall be removed prior to applying a hydrostatic test.

NOTE: When a hydrostatic test is to be applied to existing installations, the pressure shall be as follows:

(a) For all cases involving the question of tightness, the pressure shall be equal to the release pressure of the safety valves having the lowest release setting.

(b) For all cases involving the question of safety, the pressure shall be equal to 1 1/2 times the maximum allowable working pressure.

#### **6. AUTOMATIC LOW-WATER FUEL CUTOFF AND/OR WATER-FEEDING DEVICE**

Each automatically fired and unattended steam or vapor system boiler shall be equipped with an automatic low-water fuel cutoff so located as to automatically cut off the fuel supply when the surface of the water falls to the lowest safe water line. If a water-feeding device is installed, it shall be so constructed, that the water inlet valves cannot feed water into the boiler through the float chamber and so located as to supply requisite feedwater. The lowest safe water line should not be lower than the lowest visible part of the water glass.

Such fuel or feedwater control device may be attached direct to a boiler or to the tapped openings provided for attaching a water glass direct to a boiler, provided that for low-pressure boilers such connections from the boiler are nonferrous tees or Y's not less than 1/2-inch pipe size between the boiler and the water glass, so that the water glass is attached direct and as close as possible to the boiler; the straightaway tapping of the Y or tee to take the water glass fittings, the side outlet of the Y or tee to take the fuel cutoff or water-feeding device. The ends of all nipples shall be reamed to full-size diameter.

Designs embodying a float and float bowl shall have a vertical straightaway valve drain pipe at the lowest point in the water-equalizing pipe connections by which the bowl and the equalizing pipe can be flushed and the device tested.

A coil type boiler or a water tube boiler with heat input greater than 40,000 BTU/hr. requiring forced circulation, to prevent overheating of the coils or tubes, shall have a sensing device installed in the outlet piping, in lieu of the low water fuel cutoff required in this article, to automatically cut off the fuel supply when the circulating flow is interrupted.

#### **7. PRESSURE-REDUCING VALVES**

Where pressure-reducing valves are used, one or more relief or safety valves shall be provided on the low-pressure side of the reducing valve when the piping or equipment on the low-pressure side does not meet the requirements for the full initial pressure.

Proper protection shall be provided to prevent injury or damage caused by the escaping fluid, or vapor from the discharge of relief or safety valves if vented to the atmosphere. The combined discharge capacity of the relief or safety valve shall be such that the pressure rating of the lower pressure piping or equipment shall not be exceeded in case the reducing valve sticks open.

The use of hand-controlled bypasses around reducing valves is permissible: If a bypass is used around the reducing valve, the safety valve or relief valve required on the low pressure side shall be sufficient capacity to relieve all the fluid or vapors that can pass through the bypass without overpressuring the low pressure side.

It is mandatory that a pressure gage be installed on the low-pressure side of a reducing valve.

#### **8. BLOWOFF EQUIPMENT**

Blowoff equipment shall conform to the provisions set forth in the National Board of Boiler and Pressure Vessel Inspectors' publication, "Boiler Blowoff Equipment".

#### **9. LOCATION OF DISCHARGE PIPING OUTLETS**

The discharge of safety valves, blowoff pipes and other outlets shall be located so as to prevent injury to personnel.

#### **10. MAJOR REPAIRS**

When repairs are necessary, which in any way affect the working pressure or safety of a boiler or pressure vessel, an inspector shall be called for consultation and advice as to the best method of making such repairs. After such repairs are made, they shall be reviewed by and found acceptable to an inspector.

Repairs to all boilers and pressure vessels shall conform to the applicable provisions of the National Board Inspection Code.

### **11. SUPPORTS**

Each boiler and pressure vessel shall be supported by masonry or structural support of sufficient strength and rigidity to safely support the boiler or pressure vessel and its contents. There shall be no excessive vibration in the boiler, pressure vessel, or their connected piping or fittings.

### **12. BOILER DOOR LATCHES**

A watertube boiler shall have the firing doors of the inward-opening type, unless such doors are provided with substantial and effective latching or fastening devices or otherwise so constructed as to prevent them, when closed, from being blown open by pressure on the furnace side.

These latched or fastenings shall be of the positive self-locking type. Friction contacts, latches, or bolts actuated by springs shall not be used. The foregoing requirements for latches or fastenings shall not apply to coal openings of downdraft or similar furnaces.

All other doors, except explosion doors, not used in the firing of the boiler, may be provided with bolts or fastenings in lieu of self-locking latching devices.

Explosion doors, if used and if located in the setting walls within 7 feet of the firing floor or operating platform, shall be provided with substantial deflectors to divert the blast.

### **13. CLEARANCE**

When boilers are replaced or new boilers are installed in either existing or new buildings, a minimum height of at least 3 feet shall be provided between the top of the boiler proper and the ceiling and at least 3 feet between all sides of the boiler and adjacent walls or other structures. Boilers and pressure vessels having manholes shall have 5 feet clearance from the manhole opening and any wall, ceiling or piping that will prevent a person from entering the boiler or vessel. All boilers and pressure vessels shall be so located that adequate space will be provided for the proper operation of the boilers and pressure vessels and their appurtenances, for the inspection of all surfaces, tubes, waterwalls, economizers, piping, valves, and other equipment, and for their necessary maintenance and repair and replacement of tubes.

#### 14. LADDERS, PLATFORMS AND RUNWAYS

Where valves and other appurtenances require frequent manipulation and are so located that they cannot be reached or operated from the floor, a platform or other safe means of operation shall be provided. If a platform or runway is used it shall be at least 24 inches wide and be provided with standard handrails and toeboards and have at least 7 feet 6 inches head room. All runways shall have at least two (2) means of exit, each to be remotely located from the other, and connected to a permanent stairway or inclined ladder leading to the floor level.

#### 15. AIR AND VENTILATION REQUIREMENTS

Combustion Air Supply and Ventilation of Boiler Room. A permanent source of outside air should be provided for each boiler room to permit satisfactory combustion of the fuel as well as proper ventilation of the boiler room under normal operating conditions.

(a) The total requirements of the burners for all fired pressure vessels, and fired equipment in the boiler room must use the following formula to determine the square foot area of a louvered air inlet, where fired by combustible fuels. The minimum net free louvered area shall in no event be less than one square foot. The table below is based on the following formula and either the table or the formula should be used to determine the net louvered area required, expressed in square feet:

Input BTU/HOUR	Required Air Cu. Ft./Min.	Min. Net Louvered Area Sq. Ft.
500,000	125	1.0
1,000,000	250	1.0
2,000,000	500	1.6
3,000,000	750	2.5
4,000,000	1,000	3.3
5,000,000	1,250	4.1
6,000,000	1,500	5.0
7,000,000	1,750	5.8
8,000,000	2,000	6.6
9,000,000	2,250	7.5
10,000,000	2,500	8.3

BTU/HR - 10,000 x 2.5 = Air, CFM - 300 = Min. Net Area Sq. Ft.  
or

BTU/HR - 10,000 x 2.5 =  $\frac{\text{Required Air}}{300}$  = Min. Net Area, Sq. Ft.

(b) When mechanical ventilation is used in lieu of (a) above, the supply of combustion and ventilation air to the boiler room and the firing device shall be interlocked with the fan so the firing device will not operate with the fan off. The velocity of the air through the ventilating fan shall not exceed 500 CFM and the total air delivered shall be equal to or greater than shown in (a) above.

#### **16. FIRED JACKETED STEAM KETTLES**

Fired jacketed steam kettles are acceptable for installation if constructed and stamped in accordance with the ASME Code, Sections I, IV or VIII, Division 1 and registered with the National Board.

#### **17. SHOP INSPECTION AND INSPECTION OF SECONDHAND OR USED BOILERS OR PRESSURE VESSELS**

(a) Shop inspections and inspections of secondhand or used boilers or pressure vessels made by the Safety Director or a Deputy Inspector shall be charged for in accordance with Division requirements.

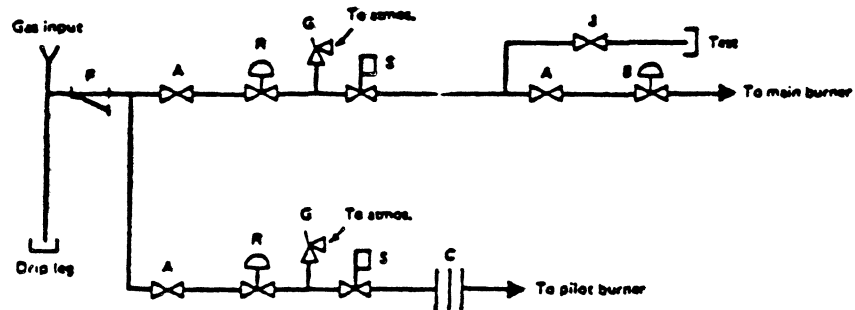
(b) The State of Utah reserves the right to maintain a current file of Quality Assurance manuals and Quality Control manuals used by all manufacturers, assemblers or installers of ASME Code items.

#### **18. CONDITIONS NOT COVER BY THESE RULES AND REGULATIONS**

For any condition not covered by these requirements, the applicable provisions of the National Board Inspection Code and/or the ASME Code shall apply.

# PART V

## ILLUSTRATION A



Above 400,000 Btu/h  
(117 228 W)  
to 2,500,000 Btu/h  
(732 678 W)

A—Manual Valve  
B—Control Valve (Modulating)  
C—Orifice  
F—Gas Filter or Strainer (if required)  
G—Relief Valve (if required)

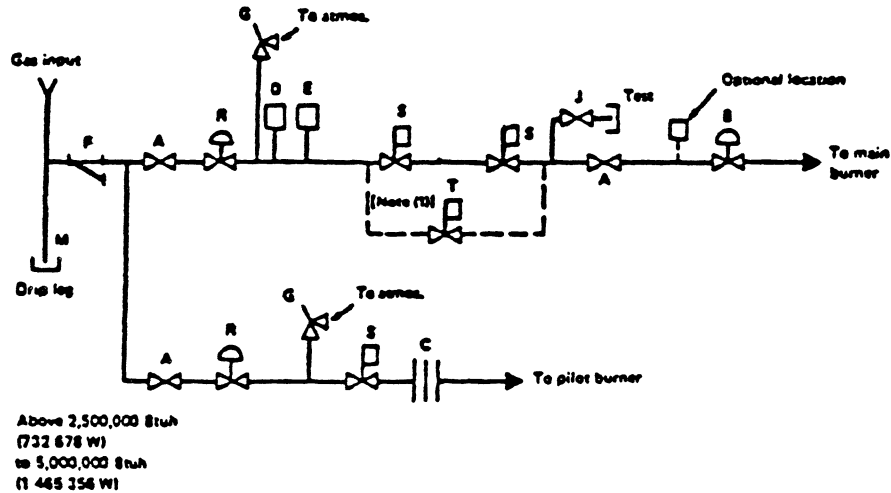
J—Leakage Test Valve  
R—Pressure Regulation  
S—Safety Shutoff Valve  
M—Pipe Cap

### GENERAL NOTE:

Since boiler design may vary, Standard for Gas Fired Steam and Hot Water Boilers, ANSI Z21.13, does not contain a typical fuel train but through laboratory testing procedures determines that safe lighting of the boiler will be accomplished; this standard illustrates a typical fuel train for boilers. The specific fuel train diagram for boilers complying with ANSI Z21.13 is supplied in the boiler manufacturer's instructions.

### TYPICAL GAS FUEL TRAINS

## ILLUSTRATION B



A—Manual Valve  
B—Control Valve (Modulating)  
C—Orifice  
D—High Gas Pressure Switch  
E—Low Gas Pressure Switch  
F—Gas Filter or Strainer — if required  
G—Relief Valve — if required

J—Leakage Test Valve  
R—Pressure Regulator  
S—Safety Shutoff Valve  
T—Safety Shutoff Valve Proof of Closure  
M—Pipe Cap

### GENERAL NOTE:

Since boiler design may vary, Standard for Gas Fired Steam and Hot Water Boilers, ANSI Z21.13, does not contain a typical fuel train but through laboratory testing procedures determines that safe lighting of the boiler will be accomplished; this standard illustrates a typical fuel train for boilers. The specific fuel train diagram for boilers complying with ANSI Z21.13 is supplied in the boiler manufacturer's instructions.

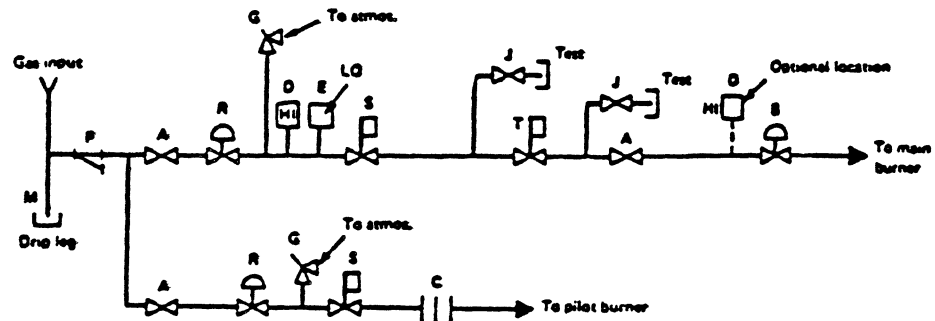
### NOTE:

(1) Alternate Arrangement — T may be used in place of two S type valves.

## TYPICAL GAS FUEL TRAINS



## ILLUSTRATION C



Above 5,000,000 Btu/h  
(1 465 256 W)  
to 12,500,000 Btu/h  
(3 663 389 W)

A—Manual Valve  
B—Control Valve (Modulating)  
C—Orifice  
D—High Gas Pressure Switch  
E—Low Gas Pressure Switch  
F—Gas Filter or Strainer - if required  
G—Relief Valve - if required

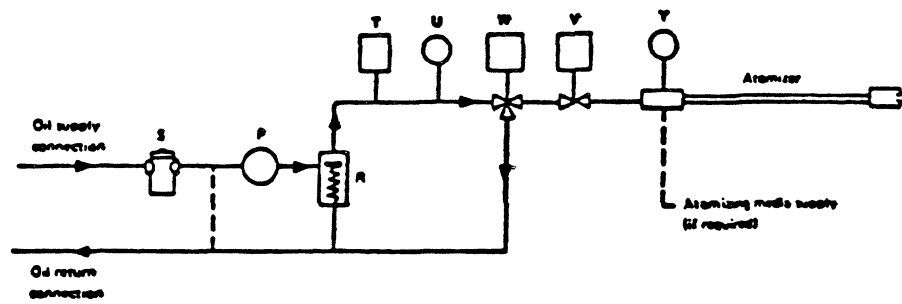
J—Leakage Test Valve  
R—Pressure Regulator  
S—Safety Shutoff Valve  
T—Safety Shutoff Valve with Proof of Closure  
M—Pipe Cap

### GENERAL NOTE:

Since boiler design may vary, Standard for Gas Fired Steam and Hot Water Boilers, ANSI Z21.13, does not contain a typical fuel train but through laboratory testing procedures determines that safe lighting of the boiler will be accomplished; this standard illustrates a typical fuel train for boilers. The specific fuel train diagram for boilers complying with ANSI Z21.13 is supplied in the boiler manufacturer's instructions.

## TYPICAL GAS FUEL TRAINS

## ILLUSTRATION D



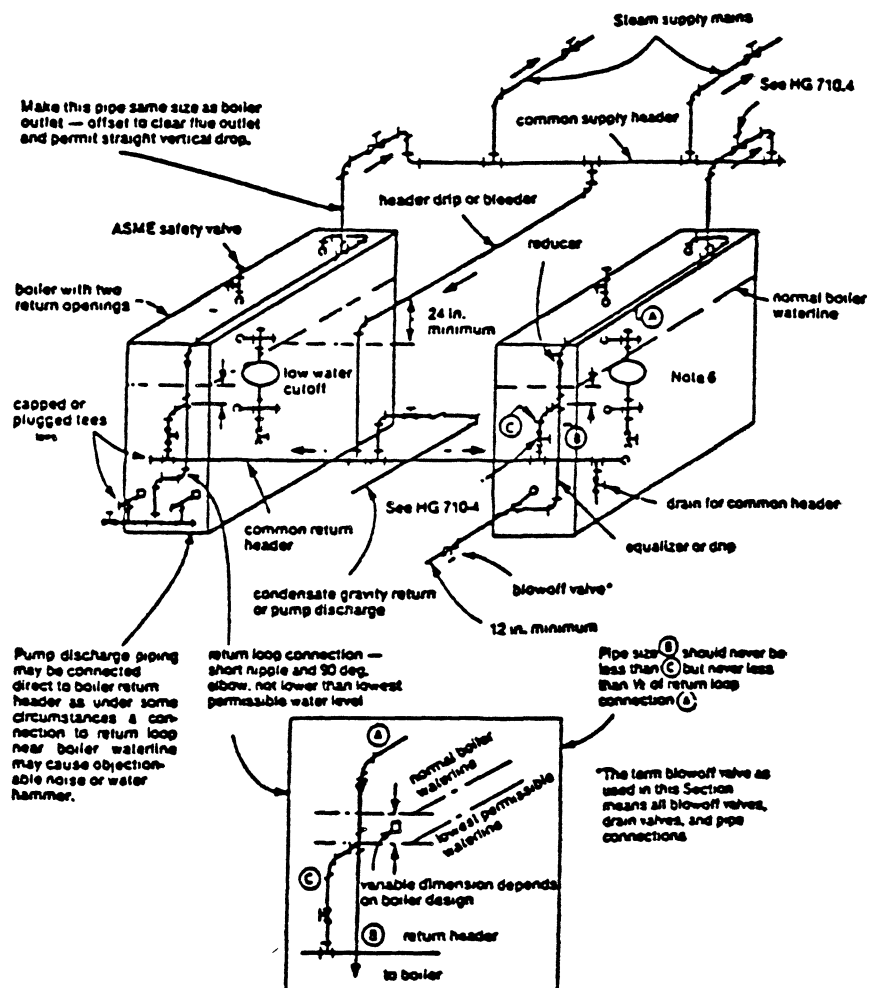
- S - Fuel Strainer
- P - Fuel Pump
- R - Shutoff Valve and/or Pressure Relief Valve
- T - Oil Temperature Interlock Switch (where required)
- U - Oil Pressure Interlock Switch (where required)

- V - Safety Shutoff Valve
- W - Safety Shutoff Valve (may be 3 Way for recirculation, See CF-460)
- Y - Atomizing Media Supply Pressure Interlock Switch (where required)

TYPICAL OIL FUEL TRAINS

# ILLUSTRATION E

## AN ACCEPTABLE PIPING INSTALLATION FOR LOW PRESSURE STEAM BOILERS IN BATTERY

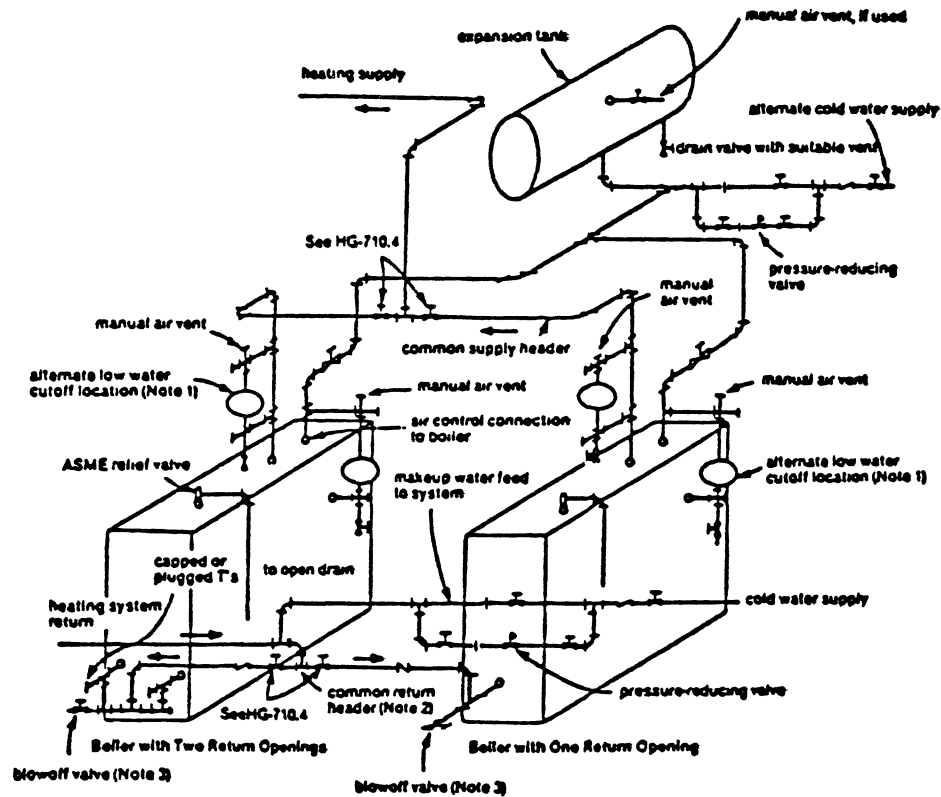


### NOTES:

- (1) Return loop connection was designed to eliminate necessity of check valves on gravity return systems, but in some localities a check valve is a legal requirement.
- (2) When pump discharge piping exceeds 25 ft., install swing check valves as shown at pump discharge.
- (3) If pump discharge is looped above normal boiler waterline, install a spring-loaded check valve at return header and at pump discharge.
- (4) Where supply pressures are adequate, feedwater may be introduced directly to a boiler through an independent connection. See MG-705.
- (5) Return connections shown for a multiple boiler installation may not always insure that the system will operate properly. In order to maintain proper water levels in multiple boiler installations, it may be necessary to install supplementary controls or suitable devices.
- (6) Requirements for New Installations (Part II Administration of this manual, Article 30, CSO-1).

ILLUSTRATION F

AN ACCEPTABLE PIPING INSTALLATION FOR  
HOT WATER BOILERS IN BATTERY



**NOTES:**

- (1) Recommended control. See HG-814. Acceptable shutoff valves or cocks in the connecting piping may be installed for convenience of control testing and/or service.
- (2) The common return header stop valves may be located on either side of the check valves.
- (3) The term *blowoff valve* as used in this Section means all blowoff valves, drain valves, and pipe connections.

**PART VI - PRESSURE VESSELS  
USED BY THE PETROLEUM AND PETRO  
CHEMICAL PROCESS INDUSTRIES  
ANSI/API 510 JURISDICTION**

Except for boilers, and notwithstanding specific rule coverage in Parts I through V, pressure vessels which fall within the scope and jurisdiction of the ANSI/American Petroleum Institute (API) Code 510 Pressure Vessel Inspection Code are exempt from the preceding sections of the regulation, providing the owner/user complies with the following rules:

- A. The owner-user of pressure vessels shall:
  - 1. Have an Owner-User Inspection Agency certified by the state;
  - 2. Have qualified inspectors in its employ;
  - 3. Annually provide a vessel inspection summary to the state;
  - 4. Maintain complete inspection reports by the Owner-User Inspection Agency which shall be available for inspection by the Safety Director or his deputies at any reasonable time;
  - 5. Obtain from the Safety Director a valid certificate of operation upon payment of fees prescribed. Such certificate of operation shall be obtained upon application by the owner-user who shall verify that the inspections required by ANSI/API 510 have been performed and that each pressure vessel is in safe operating condition.
- B. An owner-user who falls within the jurisdiction of ANSI/API 510 shall be certified by the commission as an "Owner-User Inspection Agency" by filing a letter of request with the Safety Director provided:
  - 1. That qualified pressure vessel inspector(s) are maintained;
  - 2. That the requirements of ANSI/API 510 are performed;
  - 3. That complete records available for inspection by the Safety Director are maintained.
- C. Inspector(s) in the employ of a certified Owner-User Inspection Agency shall be issued certificates of competency as pressure vessel inspector(s) by the Safety Director upon request and payment of fee by the Owner-User Inspection Agency. This request shall certify to the state that the

pressure vessel inspector(s) are qualified in accordance with the provision of ANSI/API 510.

- D. A qualified owner-user shall be allowed to maintain a Safety Relief Valve Repair Organization provided that:
  - 1. The principles of ANSI/API 510 are followed.
  - 2. The Repair Organization maintains the safety relief valves in accordance with the manufacturer's recommendations.
  - 3. At three-year intervals, the Safety Director may select two safety relief valves at random from those that have been repaired by the Repair Organization, and send these valves to an independent testing agency to be tested for set pressure and capacity. The owner-user shall bear the full cost of this testing. Failure of these valves to pass the tests within acceptable limits shall be cause for the Safety Director to require the Repair Organization to furnish additional valves for further testing sufficient to satisfy the Safety Director of the Organization's qualifications. Failure of the additional valves shall cause the Safety Director to require the owner-user to repair safety relief valves according to Part II, Article 3(b), until such time as the owner-user can again demonstrate the competence of the Repair-Organization.
- E. Revocation, for cause, by the Safety Director of the Owner-User Inspection Agency certification revokes all owner-user inspector certificates of competency. The Safety Director may also revoke, for cause, an individual owner-user inspector certificate of competency.
- F. Owner-user inspectors shall not receive any salary or expense from this state, and a certificate of competency shall be valid only as long as such owner-user inspector is employed by the qualified Owner-User Inspection Agency.
- G. The Owner-User Inspection Agency shall apply on or before January 31 of each year for renewal of certificates of competency for each owner-user inspector employed who inspects pressure vessels operated in this state. The fee must accompany application.
- H.
  - 1. Fees for Owner-User Inspection Agency certification as described in Sections B and C shall be paid as follows:
    - a) For certification as an Owner-User Inspection Agency, Two Hundred Fifty (\$250.00) dollars.

- (b) For initial issue of a Certificate of Competency, Twenty-five (\$25.00) dollars.
  - (c) For renewal of a Certificate of Competency, Fifteen (\$15.00) dollars.
- 2. Fees for Annual Vessel Inspection Summary as described in Section A-3 shall be paid as follows:
  - (a) For statements covering not more than twenty-five vessels, **Five (\$5.00) dollars** per vessel.
  - (b) For statements covering more than twenty-five but less than one hundred vessels, **One Hundred (\$100.00) dollars.**
  - (c) For statements covering more than one hundred but less than five hundred vessels, **Two Hundred (\$200.00) dollars.**
  - (d) For statements covering more than five hundred vessels, **Four Hundred (\$400.00) dollars.**

## **ADDENDUM F**



#### **58-56-4. Adoption of building codes — Amendments.**

(1) Except as provided in Section 58-56-10 and subject to the provisions of Subsection (3), the following are adopted as the construction standards to which the state and each political subdivision of this state shall adhere in building construction, alteration, remodeling and repair, and in the regulation of building construction, alteration, remodeling and repair:

- (a) the Uniform Building Code as promulgated by the ICBO;
- (b) the National Electrical Code as promulgated by the National Fire Protection Association;
- (c) the Uniform Plumbing Code as adopted by IAPMO; and
- (d) the Uniform Mechanical Code as promulgated by the ICBO and IAPMO.

(2) The division, in collaboration with the commission, shall adopt by rule the specific edition of the NEC, UBC, UMC, and UPC to be used as the standard and may adopt by rule successor editions of any adopted code.

(3) The division, in collaboration with the commission, may adopt amendments to the NEC, UBC, UMC, and UPC to be applicable to the entire state or within a political subdivision only in accordance with Section 58-56-7.

**History:** C. 1953, 58-54-4, enacted by L. 1989, ch. 269, § 7; recompiled as C. 1953, 58-56-4.

**Effective Dates.** — Laws 1989, ch. 269 became effective on April 24, 1989, pursuant to Utah Const., Art. VI, Sec. 25.

## CHAPTER 269

S. B. No. 190

Passed February 22, 1989

Approved March 14, 1989

Effective April 24, 1989

UTAH UNIFORM BUILDING  
STANDARDS ACTBy Craig A. Peterson  
Glade Nielsen

AN ACT RELATING TO OCCUPATIONS AND PROFESSIONS; ESTABLISHING UNIFORM BUILDING STANDARDS; CREATING THE UNIFORM BUILDING CODES COMMISSION; PROVIDING PROCEDURES TO AMEND ADOPTED CODES; PROVIDING FOR ENFORCEMENT OF CODES; AND DEFINING CERTAIN TERMS.

THIS ACT AFFECTS SECTIONS OF UTAH CODE ANNOTATED 1953 AS FOLLOWS.

## AMENDS:

- 26-15-3, AS ENACTED BY CHAPTER 126, LAWS OF UTAH 1981  
 26-24-13, AS ENACTED BY CHAPTER 126, LAWS OF UTAH 1981  
 26-24-14, AS ENACTED BY CHAPTER 126, LAWS OF UTAH 1981

## ENACTS:

- 58-54-1, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-1)  
 58-54-2, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-2)  
 58-54-3, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-3)  
 58-54-4, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-4)  
 58-54-5, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-5)  
 58-54-6, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-6)  
 58-54-7, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-7)  
 58-54-8, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-8)  
 58-54-9, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-9)  
 58-54-10, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-10)  
 58-54-11, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-11)

## REPEALS:

- 58-50-17, AS ENACTED BY CHAPTER 247, LAWS OF UTAH 1987  
 58-50-18, AS ENACTED BY CHAPTER 247, LAWS OF UTAH 1987  
 58-50-19, AS ENACTED BY CHAPTER 247, LAWS OF UTAH 1987

*Be it enacted by the Legislature of the state of Utah:*

## Section 1. Section Amended.

Section 26-15-3, Utah Code Annotated 1953, as enacted by Chapter 126, Laws of Utah 1981, is amended to read:

**26-15-3. Department to advise Uniform Building Code Commission regarding specific edition of Uniform Plumbing Code.**

The department shall ~~establish minimum rules for the design and installation of plumbing systems; fixtures and components used in the state~~ advise the Division of Occupational and Professional Licensing and the Uniform Building Code Commission, with respect to the specific edition of the Uniform Plumbing Code to be adopted, and amendments to the Uniform Plumbing Code as provided for under Section 58-54-5. The department may enforce the Uniform Plumbing Code. The provisions of Section 58-54-9 do not apply to health inspectors acting under this section.

## Section 2. Section Amended.

Section 26-24-13, Utah Code Annotated 1953, as enacted by Chapter 126, Laws of Utah 1981, is amended to read:

**26-24-13. Right of entry to regulated premises by department representatives for inspection.**

Upon presenting proper identification, authorized representatives of local health departments shall be authorized to enter upon the premises of properties regulated by local health departments to perform routine inspections to insure compliance with rules adopted by the department ~~or~~, by local boards of health, or by the Division of Occupational and Professional Licensing pursuant to Subsection 58-54-4 (1)(c). The provisions of Section 58-54-9 do not apply to health inspectors acting under this section. This section does not authorize local health departments to inspect private dwellings.

## Section 3. Section Amended.

Section 26-24-14, Utah Code Annotated 1953, as enacted by Chapter 126, Laws of Utah 1981, is amended to read:

**26-24-14. Powers and duties of departments.**

A local health department shall have in addition to all other powers and duties imposed on it, the following powers and duties:

(1) promote and protect the health and wellness of the people within the jurisdiction;

(2) enforce state and local laws, regulations, and standards relating to public health and sanitation, including the Uniform Plumbing Code established by Section 58-54-4;

(3) investigate and control the causes of epidemic, infectious, communicable, and other diseases affecting the public health, and investigate and control the causes of environmental and occupational health hazards affecting the public health, and provide for the detection, reporting, prevention, and control of communicable, infectious, acute, chronic, or any other disease or health hazard considered dangerous or important or which may affect the public health;

(4) establish, maintain and enforce isolation and quarantine, and exercise such physical control over

## **Section 7. Section Enacted.**

Section 58-54-4, Utah Code Annotated 1953, is enacted to read:

### **58-54-4. (Codified as 58-56-4) Adoption of building codes — Amendments.**

(1) Except as provided in Section 58-54-10 and subject to the provisions of Subsection (3), the following are adopted as the construction standards to which the state and each political subdivision of this state shall adhere in building construction, alteration, remodeling and repair, and in the regulation of building construction, alteration, remodeling and repair:

(a) the Uniform Building Code as promulgated by the ICBO;

(b) the National Electrical Code as promulgated by the National Fire Protection Association;

(c) the Uniform Plumbing Code as adopted by IAPMO; and

(d) the Uniform Mechanical Code as promulgated by the ICBO and IAPMO.

(2) The division, in collaboration with the commission, shall adopt by rule the specific edition of the NEC, UBC, UMC, and UPC to be used as the standard and may adopt by rule successor editions of any adopted code.

(3) The division, in collaboration with the commission, may adopt amendments to the NEC, UBC, UMC, and UPC to be applicable to the entire state or within a political subdivision only in accordance with Section 58-54-7.

## **ADDENDUM G**

## CHAPTER 269

## S. B. No. 190

Passed February 22, 1989

Approved March 14, 1989

Effective April 24, 1989

UTAH UNIFORM BUILDING  
STANDARDS ACTBy Craig A. Peterson  
Glade Nielsen

**AN ACT RELATING TO OCCUPATIONS AND PROFESSIONS; ESTABLISHING UNIFORM BUILDING STANDARDS; CREATING THE UNIFORM BUILDING CODES COMMISSION; PROVIDING PROCEDURES TO AMEND ADOPTED CODES; PROVIDING FOR ENFORCEMENT OF CODES; AND DEFINING CERTAIN TERMS.**

THIS ACT AFFECTS SECTIONS OF UTAH CODE ANNOTATED 1953 AS FOLLOWS:

**AMENDS:**

- 26-15-3, AS ENACTED BY CHAPTER 126, LAWS OF UTAH 1981  
 26-24-13, AS ENACTED BY CHAPTER 126, LAWS OF UTAH 1981  
 26-24-14, AS ENACTED BY CHAPTER 126, LAWS OF UTAH 1981

**ENACTS:**

- 58-54-1, UTAH CODE ANNOTATED 1953 (CODIFIED AS 58-56-1)  
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**REPEALS:**

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**Section 2. Section Amended.**

Section 26-24-13, Utah Code Annotated 1953, as enacted by Chapter 126, Laws of Utah 1981, is amended to read:

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- (2) enforce state and local laws, regulations, and standards relating to public health and sanitation, including the Uniform Plumbing Code established by Section 58-54-4;
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- (4) establish, maintain and enforce isolation and quarantine, and exercise such physical control over

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The department shall advise the Division of Occupational and Professional Licensing and the Uniform Building Code Commission, with respect to the specific edition of the Uniform Plumbing Code to be adopted, and amendments to the Uniform Plumbing Code as provided for under Section 58-56-5. The department may enforce the Uniform Plumbing Code. The provisions of Section 58-56-9 do not apply to health inspectors acting under this section.