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SURVEY OF FIREPREVENTION PROBLEMS
AT WAR RELOCATION CENTERS

By William E. Hoffman
Fire Protection Supervisor
San Francisco Regional Office

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I. INTRODUCTION.

At War Relocation Centers--as in all other urban communities--the hazard of fire, with its threat to life and property, is an important concern of the local government. Necessarily, steps must be taken to develop adequate preventive and protective measures so that the residents may live without serious fear of their lives or the destruction of property. War Relocation Centers differ materially, however, from the ordinary urban community in two important respects:

First, the government of the community, so far as providing fire fighting equipment and men trained in fire fighting are concerned, is vested in the War Relocation Authority itself. The community council which provides local self-government at the relocation centers is without power to levy taxes, purchase equipment or otherwise to handle the problem.

Second, almost all property at a relocation center is owned by the Federal Government, and consists principally of buildings and community facilities which, in our present wartime economy, it would be extremely difficult to replace. There is very little private property at relocation centers; most of what there is consists of clothing, bedding, furniture and personal effects. There are no privately owned homes or business establishments. From a property standpoint,

therefore, residents of the relocation centers have much less incentive to exercise fire caution than in the ordinary community where they would have an important part of their savings invested in a home, household furniture, farm implements, livestock, merchandise or other forms of wealth or means of livelihood.

It is also significant that an important part--probably 40 per cent--of the residents of relocation centers have heretofore lived in rural areas and are not fully aware of urban fire risks.

One of our early jobs, therefore, in these relocation centers has been to develop a consciousness by the residents of the hardships they would suffer individually if a large portion of their community should be destroyed by fire. To an important extent co-operation in our fire prevention activities has been promoted by that type of approach.

In these new communities we have an opportunity to test the recommendations of fire prevention authorities who have emphasized how sharply fire losses can be cut by proper fire prevention measures.

Here we have now communities unhampered by many factors which in older communities make it difficult to enforce fire prevention regulations. We have no habits of long standing in these relocation centers, nor do we have laws that need amending. We start with a clean sheet and make our own laws. All community officials are federal government employees whose actions can be controlled.

The following report is based on careful observation of fire risks at four relocation centers -- Tule Lake, Manzanar, Colorado River and Gila River projects. It also includes a review of fire fighting facilities in these relocation centers and reflects the administrative problems which the War Relocation Authority has encountered in its efforts to provide facilities and trained personnel for fire prevention and suppression work.

In brief, this report summarizes the writer's observations during almost three months of service as Fire Protection Supervisor for the San Francisco Region. The report also carries a series of recommendations for an adequate fire prevention program based on observations up to this time.

II. SPECIAL CONDITIONS CREATING FIRE RISKS.

The basic hazard of fire loss at WRA centers arises from the type of construction and the fact very little consideration has been given to the matter of fire safety. It also is heightened by the dry, hot climate of the arid and semi-arid country in which the WRA centers have been located.

For the most part, the WRA centers were built rapidly to meet the pressure for quick relocation of evacuees from the coastal districts. The basic housing unit at Tule Lake, Manzanar, and Colorado River consists of barracks each 20 feet in width and 100 feet in length, and follows the general pattern of the War Department's theater of operations construction.

The evacuees, therefore, have their homes in barracks constructed of unseasoned lumber and covered with 40-pound tar paper.

The roofing also consists of this same weight tar paper. These homes are subject to progressive deterioration from hot desert winds and sun which also add to the fire hazard.

At the Gila River Project, the type of construction is somewhat better, consisting of painted gypsum board siding which, to a limited degree is fire resistant. Also, the Gila River Project will use gas for heating, which offers an additional factor of safety over coal or oil used at the other centers. Apparently, however, the same mistakes have been made at Gila as at Tule Lake and Poston in the design of flues.

Natural Factors Create Hazards.

Basically, therefore, the homes in the relocation centers offer a serious fire hazard in themselves. The threat to human life at the centers is also increased by the fact that with few exceptions, hospitals, mess halls, schools and other places of assembly are of substantially the same type of construction as the barracks.

But the fire hazard is not alone a matter of the type of construction. It is seriously compounded by the natural setting in which the centers are located. Two of the three centers covered by this report--Manzanar and Colorado River--are in the driest region of the United States. At Tule Lake, the annual rainfall averages 10 inches and the section must be classified as distinctly semi-arid.

The United States Weather Bureau reports that the relative humidity at Manzanar has dropped as low as 2-1/4 per cent and that relative humidity readings of less than 10 per cent can be expected on an average of twelve days during the summer and early autumn. Conditions of flammability during periods when

the relative humidity is less than 10 per cent are difficult to describe. According to Mr. Grey, chief of the Bureau's fire weather service in San Francisco: "A fire occurring with a relative humidity of 2- $\frac{1}{4}$ per cent would be uncontrollable."

Humidity in Manzanar Area.

The following table shows the average relative humidity at noon at Independence, California, approximately six miles north of Manzanar, during the summer and fall months:

Average Relative Humidity at Noon in Summer and Fall Months at Independence, California

May . . 23 percent	September . 18 percent
June . . 16 percent	October. . 22 percent
July. . 15 percent	November. . 33 percent
August. 17 percent	

Forest service officials consider any humidity condition of less than 15 per cent as creating an acute fire hazard, causing fires to ignite easily and spread very rapidly.

High Winds.

A further aggravating factor at Manzanar is that meteorological conditions producing periods of extremely low humidity (namely, a high pressure over the continent) are conducive to strong winds. In other words, the likely to occur simultaneously and with them, probability of high temperatures in the Fall. Observations have established that under such conditions may reach as high as occasionally as much as 45 and 50 miles an hour.

The Weather Bureau has officially recorded a wind velocity of 100 miles an hour at Independence, with velocities above 45 miles an hour in all months of the year and above 50 miles nine months of the year. These are the highest wind velocities recorded at any regular weather bureau station in California, including those along the coastline. By comparison, the highest velocity recorded in San Francisco is 50 miles an hour and at Los Angeles 48 miles an hour.

These circumstances are cited to show the peculiar fire conditions which exist in the desert regions of the Far West. There is no adequate comparison with them to be found anywhere else in the United States. In the Manzanar district, the fire-weather service reports the most acute conditions can be expected to occur during the months of September, October, and early November.

Conditions in Tule Lake Area.

At Tule Lake, general climatic conditions constitute a slightly less acute fire hazard than at Manzanar, though severe fire weather is of annual occurrence. It is, however, inclined to be less protracted. The fire-weather service reports that humidity conditions of between 15 and 10 percent are common, and that on from four to six days annually the relative humidity can be expected to decrease to less than 10 per cent.

Periods of low humidity at Tule Lake are usually associated with high temperatures and accompanied by considerable wind movement, especially during the hours of peak temperature and lowest humidity. Generally, however, the maximum winds

at Tule Lake occur in the spring and while there is no anemometer at the Tule Lake cooperative weather reporting station, the Klamath Falls station has often recorded winds in excess of 40 miles an hour during March, April, and May. In May of this year, a velocity of 64 miles an hour was recorded at Klamath Falls and there is good reason to believe that even stronger winds occurred in the Tule Lake Basin.

At both Tule Lake and Manzanar, the winds are accompanied with little or no precipitation so that fire conditions are apt to be unusually acute at those times.

It Could Happen.

It is the writer's considered opinion that, should a sizable fire occur at Manzanar, Tule Lake, or Poston under conditions of extreme humidity and wind movement of which there is ample history of actual occurrence, the entire camp might be wiped out unless more adequate preparations are made for fire suppression than now exist. Fire prevention steps now under way will help materially, but will not completely solve the problem.

Winter Conditions.

The fire hazard at the relocation centers is not limited to the summer months although these months do present the most threatening combination of conditions. The seriousness of a fire in the winter months which might render a few thousand persons homeless is apparent in the severity of the winter weather in the Tule Lake and Manzanar districts and the fact, also, that the relocation centers are situated in areas of extremely sparse population.

At Tule Lake, winter temperatures well below zero are not uncommon while at Manzanar temperatures below 10 degrees are often recorded. In no instance are there facilities at or near any of the relocation centers for the quick movement of large numbers of persons. The population of Manzanar, for instance, is greater than the population of all Inyo County, while the population of Tule Lake is approximately that of the city of Klamath Falls. Providing emergency housing for these people in the event of a major catastrophe would be an exceedingly difficult problem.

III. SOME GENERAL OBSERVATIONS AT RELOCATION CENTERS.

At all relocation centers several defects in construction from a fire prevention standpoint are readily observable. Particularly important was the lack of proper "jacketing" of flues in all the mess-halls. Adequate protection in this case would require a ventilated "jack" extending 9 inches below and 9 inches above the roof. In several instances, it was observed that the flue was not more than 2 inches from combustible material on the roof. Steps are being taken to avoid similar mistakes in future construction.

Inadequate Wiring.

The inadequate wiring in living quarters at the projects is a matter of serious concern. First of all, a sufficient number of outlets has not been provided, resulting in a tendency to overload existing lines. This is a condition which will have to be carefully watched as there is a considerable amount of electrical equipment yet to be brought to the centers by the evacuees. Much of this is the ordinary "dime store" type of equipment.

There is also, quite naturally, the tendency to plug in extensions and to lead them from one end of the living quarters to another. Often the extension will be hung over nails or a rafter, adding to the hazard of fire because the wear on the insulation soon will expose the wires, producing short circuits. This is particularly true in hot, dry climates such as at Manzanar and Poston, where there is a tendency for the wire insulation to break down in a short time. The overloading of the lines leads to a further complication: When a fuse has been repeatedly blown out, many people will insert a coin or make other improvised adjustments for bridging the fuse.

At Manzanar a survey was made of the amount of electrical equipment in the evacuees' homes. One June 1, 1942, this survey showed, there was in use a total of 5.5 miles of extension wires of various types. An effort will be made to obtain similar information at all other projects; in critical fire seasons it will be necessary to make frequent surveys of the amount of loading on the lines.

Space Heating and Fire Hazards.

Heating of living quarters offers another serious problem, particularly at Tule Lake and Manzanar where there is a long season of severe winter weather. At Tule Lake it will be necessary to replace the sheet metal stoves with cast iron stoves if a serious fire menace is to be averted. Oil stoves in living quarters generally are fairly safe although care must be exercised in their use and when refilling the fuel tank.

Any improvement in construction by way of insulation and greater protection against low temperatures will do much to reduce the fire hazard during the winter months; the tendency

toward over-heating in barracks would naturally increase if there are drafts due to poor construction.

IV. ADMINISTRATIVE PROBLEMS IN DEVELOPING FIRE PREVENTION FACILITIES.

Many serious problems have been encountered in attempting to provide fire fighting facilities to keep pace with the growth of the relocation centers. It has not been possible to overcome all these difficulties and at this time it must be admitted the facilities are not adequate.

Training Required.

Here are some of the more important problems which have been encountered in providing fire protection:

(A) Among approximately 40,000 evacuees now in relocation centers, only two have had training as firemen. One of these was attached to the Fruitridge, Sacramento County, Fire Department; the other had had rather responsible experience at Camel Highlands, Calif. They are now at Tule Lake and Postn. One of our first problems, therefore, was to set up a program of training fire fighters. At each relocation center a fire force was recruited from among the first evacuees to arrive. Crews have been kept on 24-hour duty, serving approximately 44 hours a week. They have been organized under a Fire Protection Officer who is responsible for carrying out a training program. Experience up to this time indicates the Japanese are a courageous, intelligent people who quickly respond to a well-organized educational program. There is still a great deal to be done in the field of training a fire force and in developing an adequate fire prevention plan.

Lack of Equipment.

(B) Serious difficulty has been encountered in obtaining fire fighting equipment because of priorities on critical

materials such as steel, brass, bronze and rubber.

When evacuees first arrive at a project, the fire protection is usually limited to a few first-aid fire extinguishers, some scattered lengths of garden hose, often with garden faucets, and so placed that several of them must be used to reach a possible fire. There are usually a number of shovels available.

The ingenuity of the Fire Protection Officer at the project is challenged by this lack of fire apparatus, the absence of a fire alarm system and also by the lack of telephones in the area occupied by the evacuees.

The fact that there has not been a serious fire under these circumstances is a rather convincing demonstration of the value of fire-prevention activities. There have been a number of small fires, all of which were handled by fire patrols which had anticipated the action to be taken in each case.

Delays in the delivery of fire equipment had to be met by the organization of fire patrols in the hope that any situation could be met until the necessary equipment arrived.

Equipment Delay at Colorado River.

The population at Colorado River Project reached 11,306 before a single foot of fire hose or apparatus was delivered. On July 6, one Ford triple combination pumper, equipped with 1000 feet of $2\frac{1}{2}$ " hose, and 300 feet of $1\frac{1}{2}$ " hose, was delivered there. Unfortunately, there were no nozzles for the $2\frac{1}{2}$ " hose, or for the booster hose. A second piece of apparatus of the same type was delivered to Parker on July 27, and was assigned to Camp #2. This apparatus was short 300 feet of $1\frac{1}{2}$ " hose, also the necessary nozzles listed above. In order to use this second fire apparatus, $1\frac{1}{2}$ " hose had to be stripped from

the first apparatus at Camp #1.

On July 30th while fighting a rubbish fire at Camp #2, there was a breakdown in the equipment with the result that on August 2, with two camps about four miles apart, and with a total population of 13,259, there was only one pumper with a pumping capacity of 500 g.p.m., and it not able to use streams from $2\frac{1}{2}$ " lines. This was only 20% protection.

Arrangements with War Department.

Representations have also been made to the Engineering Division of the United States Army with the result that more adequate equipment has been allotted to the relocation centers than it first specified. At first, no distinction was made between a center for 5,000 people and one for 10,000.

As a result of negotiations with the Army, two fire trucks are to be provided for each center of 10,000 capacity or less, and for a center of more than 10,000 one truck will be provided for each 5,000 capacity beyond that figure. Details of fire fighting equipment to be provided by the Army are contained in Circular Letter #20, Supplement C, issued by the San Francisco Regional Office on June 17.

Even with the increase in equipment provided by the Army, there is still ~~an~~ inadequate protection of all relocation centers. In all cases there should be 2,000 feet of $2\frac{1}{2}$ " hose for each fire truck; at present, only two fire trucks are thus equipped.

Water Supply and Facilities.

Also of prime importance here are two items through which fire fighting facilities are able to function: (1) water supplies and water facilities, and, (2) electric power. In all

instances, the quantity of water available appears adequate, perhaps with the exception of Parker, though at Manzanar, serious attention should be given to determine whether source streams might freeze up in the coldest weather.

At two of the centers--Tule Lake and Manzanar--there is a natural water pressure because of the highest elevation from which the water supply is/ obtained. At other places, however, there is a supplemental water supply obtained from wells which have to be drawn upon rather heavily in certain seasons of the year. At Parker and Gila, it is necessary to create most of the head by use of elevated water tanks.

In all instances, the water systems have been properly gridded and, with the exception of Tule Lake, the fire hydrants are of standard design and construction.

Electric Power.

Electric power prominently enters the picture because of its use for pumping. At all the relocation centers electric power is being brought into the project by a transmission line. A serious fire menace obviously develops whenever the power is cut off, as it was at the Colorado River project when a severe storm struck on the evening of July 22. This event emphasized the importance of having a supplemental water supply available at all times.

Considering the fire menace resulting from the breakdown in power facilities, it is here recommended that special steps be taken to guard against the possibilities of power failures. As a practical plan, it is suggested that tractors at the project be equipped with power takeoffs which can be tied up with belt-driven pumps to supply the necessary water for fire

fighting purposes. Whenever water is available in canals, as at the Colorado River and Mindioka Projects, provision can be made for pumping water by draft. Additional fire hose, however, would probably be necessary to use canal water over any considerable part of the town area.

Rubber Rationing.

Tight rationing of rubber has made it necessary to purchase single-jacket, rubber-lined hose which cannot be expected to give much more than one year of service except with most extraordinary care. This hose also will have to be used carefully to prevent breaking. Deterioration in the hot, dry climate of the relocation centers will probably reduce its period of usefulness considerably unless reserve hose can be maintained under controlled humidity with ample supplies and facilities for frequent change and servicing. In many other lines the quality of available equipment is much below what was on the market only a few months ago. Replacement, therefore, will undoubtedly exceed the normal rate of the past.

Extinguishers:

I should like here to refer briefly to some errors which I believe have been made in purchasing fire fighting equipment for the projects. These practices have now been discontinued and I make this reference only because the materials here referred to are still on hand.

At four of the projects -- Manzanar, Tule Lake, Gila and Colorado River -- carbon tetrachloride glass, hand, grenade type, extinguishers have been placed in brackets on the walls of the barracks and administrative offices. At

best this type of extinguisher is of limited use. There are many fire conditions--for example, a fire on a ceiling or in a flue--in which this type of extinguisher would be almost worthless. In confined quarters, it may be dangerous because of the phosgene gas which develops when carbon tetrachloride is exposed to heat. At all centers where these extinguishers are installed the fire departments have been warned to be on the alert for this hazard.

Pyrene extinguishers which also employ carbon tetrachloride have been installed in large numbers at Tule Lake. For some time this was the only type of extinguisher in use. We plan, therefore, to arrange the transfer of this equipment to places where it will be more suitable. An order has been placed for nearly 1,000 5-gallon, pump-type, knapsack extinguishers which, through the plan of block organization for fire fighting, can be used to concentrate a large amount of first aid equipment at any point where needed. At best, however, extinguishers of any type are only of first-aid value and all persons in the centers have been advised against placing too much reliance in them.

Hose Threads and Standardization.

Fire protection engineers have devoted many years to the work of standardizing hose, threads and equipment. Manufacturers were well equipped to produce nozzles, fittings and equipment that were standard and this equipment was to be found in large quantities in stores and distributed in the field to operating Fire Departments.

When this war started much of the work of the past was discarded by some government agencies, by specifications that

made the stocks of fire equipment useless unless special adapters were made, causing delay while waiting for the manufacture of equipment that could be used.

Because of these conditions, before any definite steps can be taken to secure fire equipment, we must receive definite information on all details at each project. We are often unable to use borrowed equipment while waiting for this emergency material.

Some Observations on Project Fires.

The fire at Tule Lake Project on August 13, 1942, at 4:40 a.m. in Community Store No. 3 in which a loss of approximately \$3,500.00 was incurred, removes all doubt as to the performance of the Japanese as firemen when they have received proper training. Sixty percent of the original building was saved, notwithstanding delay in transmitting the alarm, due to lack of an alarm system. The writer can heartily agree with Associate Fire Protection Officer, Ernest Rhoads, in his statement: "---I would say that the performance of the firemen~~x~~ was excellent."

This fire, had it occurred at any of the other projects would not have been stopped with as little loss, for the Tule Lake Project is the only project that has equipment for heavy streams.

There have been five (5) fires in Colorado River Project kitchens due to too little clearance between heating equipment and hot-water pipes or stacks, and combustible material. One fire occurred here where heat was transmitted through the metal covering to wooden floors beneath the stoves. The losses have been nominal due to alertness of personnel, as these fires are anticipated.

Several fires of like nature have occurred at the Manzanar Project where the losses have been nominal.

There have been no fires to date at Gila River Project or Minidoka Project.

V. RECOMMENDATIONS FOR ADEQUATE FIRE PROTECTION.

To provide adequate fire protection at all the relocation centers it will be necessary over the next several months to work toward several objectives. Some of the more important of these follow:

(a) The most immediate need is for equipment. There have been unavoidable delays because of the general shortage of materials in many lines. Transportation difficulties have also added to the delay. Some equipment is now in transit.

At the Colorado River Project one additional triple-combination 500-gallon-per-minute pumper is needed at Camp No. 1, which, with two supplied by the USED, will make a total of three; Camps 2 and 3 should each be provided with one additional pumper besides one each to be supplied by USED. There now is but one pumper at Poston, this at Camp No. 1. Two more will be provided very soon and a third is now on order from the East. In addition to fire hose supplied by the USED, the WRA should purchase 6,000 feet of $2\frac{1}{2}$ inch hose ~~xxxxxx, 500~~ for the three pumps listed above, and also 4,000 feet of $2\frac{1}{2}$ " hose for the four pumps which will be supplied by the USED. Six thousand feet of $2\frac{1}{2}$ " hose and 3,500 feet of $1\frac{1}{2}$ " hose have been requisitioned.

At Tule Lake, the USED will supply three triple-combination ^{hand} pumpers, two of which are second/equipment now on the project. One additional pumper with 2,000 feet of $2\frac{1}{2}$ inch hose is needed.

At Manzanar, there is now one- triple-combination pumper and 1,000 feet of $2\frac{1}{2}$ " hose and 300 feet of $1\frac{1}{2}$ inch hose. Another pumper will be supplied by USED with 1,000 feet of $2\frac{1}{2}$ inch hose. For supplemental purposes there should also be added to the Manzanar equipment a 500-gallon-per-minute pumper with a 200-gallon water tank, and equipped to carry 1,000 feet of $2\frac{1}{2}$ inch hose and 200 feet of $1\frac{1}{2}$ inch hose. Reserve hose equipment should be 3,000 feet of $2\frac{1}{2}$ inch hose and 700 feet of $1\frac{1}{2}$ inch hose, together with fittings.

At Gila, the USED has agreed to provide three 500 GPM triple combination pumpers for fire protection, two to be stationed at Camp 2 and one at Camp 1. At this time there is one piece of apparatus at Camp 1. What incidental equipment this pumper has was not known at the time this report was written.

To provide adequate fire protection at Gila, in my opinion, one more pumper must be furnished for each of the two camps.

The above recommendations cover the major needs in the way of large equipment, but do not include much small equipment for which we are attempting to arrange procurement in the near future.

/Signed/ William E. Hoffman

History of the Fire Protection Program
June, 1943

The purpose of this report is to outline the history of the Fire Protection Program of the War Relocation Authority from its inception to the present writing. In so doing, we shall endeavor to show the importance of the problems with which we have had to contend, the methods used to solve these problems, the changes in policy found necessary from time to time, and the status of the fire protection program as of this date.

Objectives

Since the objectives of the fire protection program are to safeguard lives, to prevent personal injuries caused by fire, to prevent destruction of property by fire, water and smoke, and to salvage as much property as possible in case of fire, great stress has been laid upon the prevention of the outbreak and spread of fire.

Early Organization

As originally set up, there was no provision in the organization plan of the War Relocation Authority for a fire protection program. However, from Mr. Robert B. Cozzens, former Assistant Pacific Coast Regional Director, it is learned that this subject had been under discussion in San Francisco prior to May 1, 1942, with the office of General DeWitt.

As of May 1, 1942, some of the project sites had not yet been officially designated, and the only regional office was located in San Francisco. The Manzanar project was an assembly center under the jurisdiction of the Wartime Civil Control Authority and was not taken over by the War Relocation Authority until June 1, 1942. The Colorado River project at Poston, which was the first one constructed, was about ready to receive its first 250 evacuees. The Tule Lake project, which was to house 10,000 evacuees, was still under construction but was scheduled to receive its first evacuees on May 20. No information was available regarding the type of fire protection equipment on hand at any of these projects nor what, if any, equipment was to be provided by the U.S.E.D. to accommodate a population of 5,000. Construction had not yet been commenced on any of the other projects.

On May 11, 1942, the Fire Protection Program was inaugurated at San Francisco when the appointed Fire Protection Supervisor entered on duty, charged with providing fire protection for all projects under the jurisdiction of the War Relocation Authority. At that time, authorization was given to employ one Assistant Fire Protection Officer (Grade CAF-7, \$2600 per year) for each project, on the basis of a 4-months appointment in each case--entrance on duty to be effective when WRA organization was begun on the projects.

Over the protest of the Fire Protection Supervisor, it was planned that evacuees were to be trained intensively in fire protection work for just four months, and that the Fire Protection Supervisor, by frequent trips into the field, would supervise this important work.

Colorado River Project

When the Fire Protection Supervisor arrived at the Colorado River project on May 15, he found conditions in a really deplorable state. To make matters worse, he was handicapped by finding there was no car available for his use.

There were already 250 evacuees on the project, and others were scheduled to arrive daily in groups of from 500 to 1000. Trash and scrap lumber were piled everywhere, fire hydrants were not yet installed, water service was limited to a very few blocks, and telephone service was limited to the temporary administration building. There was no organization of any kind for fire fighting and there were no fire extinguishers, buckets, or barrels, nor any other kind of fire-fighting equipment except a few scattered sections of garden hose and 3/4" garden hose faucets--all too few to reach a possible fire without organization. The most serious condition of all was that little concern was manifested by any one on the project, nor were any precautions being exercised to prevent fires.

dirt In anticipation of a possible fire, residents were taught how to use/or sand to extinguish fire; also how to use boards for improvised shovels for this purpose. Plans were made to bring garden hose from adjoining blocks to the scene of a fire, and certain evacuees were detailed as runners to transmit fire alarms.

Later, a 2½-ton Dodge truck was assigned to the Fire Department. In order to be prepared insofar as possible for any outbreak of fire, this truck was loaded with some 2½ gallon pump-type and a few foam-type extinguishers, garden hose, shovels, hoes, sacks, buckets, and short home-made ladders, as well as two 30-gallon trash cans filled with water.

An Assistant Fire Protection Officer was appointed who was to report for duty on May 31, 1942. Therefore the Fire Protection Supervisor, who was urgently needed at the Tule Lake project, left on May 30. Some hastily-drawn fire regulations were left at the project until more complete regulations could be prepared. In accordance with the policy in effect at that time, the evacuee Fire Chief, Thomas Nishimoto, was left in charge, although his only training along these lines was what he had gained during the previous two weeks.

Tule Lake Project

In the meantime trouble was brewing at the Tule Lake project, where there was as yet no hose nor fire apparatus and all attempts to learn what equipment would be furnished or when it might be expected met with failure. As it was the consensus of opinion in WRA at that time that we had a priority of A-1-J from WPB, on June 1 the Assistant Fire Protection Officer at Tule Lake ordered 650 feet of 2½ inch fire hose and a used nozzle tip, which equipment was vitally needed. This order was delivered to the project on May 29, 1942, as an emergency purchase, with the understanding that the priority would be delivered to the dealer later. The hose was paid for by WRA but the Tule Lake project

has never been able to furnish the priority. However, the Washington office is now endeavoring to make an adjustment in this case, and it is hoped that it will soon be cleared up. As proof of the great need of this equipment, the day following delivery a fire occurred in an apartment of one of the administrative personnel, and had it not been for this fire hose, the entire administrative area would undoubtedly have been lost. (See letter from Acting Project Director Elmer L. Shirrell to Regional Director E. R. Fryer, of May 30, 1942.)

The Fire protection Supervisor arrived at Tule Lake on June 3, 1942, on his first inspection of the Project. Here, also, an alarming situation was found. Serious fire hazards were everywhere apparent. (See confidential survey of Fire Protection Problems at WRA Centers-August 21, 1942.)

A check was made with the Area Engineer regarding a change of design for roof jacks and a different method of installing heating equipment suggested by the San Francisco office of the WCCA. (See letter of May 30, 1942, from Acting Project Director Shirrell to Regional Director on "Fire at Tule Lake Project".) In the opinion of the Fire Protection Supervisor, these contemplated changes would not give adequate protection; however, the USED Area Engineer did not concur. Because of this difference of opinion, it was agreed by both parties to settle the controversy by requesting an opinion of an engineer from the San Francisco office of the Board of Fire Underwriters. It developed that the findings of the BFU engineer supported those of the Fire Protection Supervisor. (See report of Engineer Arthur A. Ross of the BFU, dated June 10, 1942.)

In order to standardize procedures and to assist in training evacuee fireman in the use of two used fire engines which had been received from the Army on June 12, the Fire Protection Supervisor remained at Tule Lake until June 17, 1942. A fire protection organization was set up there along the same lines as the one already established on the Colorado River project. The practice of using an evacuee Fire Chief was adopted, as well as the title of Fire Protection Officer for appointed personnel, which title was found convenient in avoiding confusion that would have resulted had such officers been called Fire Chiefs.

About this time fires at the Tule Lake project began to occur with alarming frequency, caused principally by the improper installation of stoves, flues and water heaters. However, as such fires had been anticipated and methods for their control had been devised, losses were small. We were successful in obtaining authority to make the necessary changes in installation and emergency measures were inaugurated to prevent the occurrence of fires before such alterations could be made. The evacuee fire department responded splendidly to the training program and in an amazingly short time they were quite efficient.

On June 6, 1942, while the Fire Protection Supervisor was at Tule Lake, a letter was received from evacuee Fire Chief Thomas Nishimoto of the Colorado River project, urgently requesting the appointment of a Caucasian Fire Protection Officer, since, according to him, he being

an evacuee, "was unable to get the necessary cooperation in matters of fire protection". A telephone call was received on June 7 from the San Francisco regional office, advising that the appointed Assistant Fire Protection Officer had not entered on duty at Colorado River, and requesting the immediate filling of that position. Therefore, the Fire Protection Supervisor endeavored to contact qualified men for fire protection service, and Mr. Ernest Rhoads (who is still at the Tule Lake project) entered on duty at Tule Lake as Assistant Fire Protection Officer. This appointment made it possible to detail the Assistant Fire Protection Officer then at Tule Lake to the Colorado River project.

Organizational Development

At the time the three regions were established, the Pacific Coast region consisted of six projects, only part of which were under construction. The two new regions each consisted of two projects on which no construction had yet started. It was at this time that the need of an over-all fire protection program from the Washington office level first became apparent to the Fire Protection Supervisor. However, as there were only two projects in each of the two new regions, the employment of a Fire Protection Supervisor for each region did not seem justified at that time. Although there was a reticence on the part of the Pacific Coast Region to suggest any jurisdiction over the other regions, copies of communications and regulations from the San Francisco office were sent to these other regions "for their information". In October, 1942, the Fire Protection Supervisor was requested to supervise all three regions in reference to the fire protection program.

Fire Chiefs had been appointed at the Jerome and Rohwer projects, and an Assistant Fire Protection Officer at Granada, none of whom were

passed upon by the Fire Protection Officer nor had they served in a WRA project before assuming their duties. The Heart Mountain project at this time was operating with a 100 percent evacuee fire department personnel, since all efforts of the Fire Protection Supervisor and the project to obtain a Fire Protection Officer failed to locate a qualified man who would accept a position on this project.

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.....Prior to June 1, 1942, thousands of 1-pint glass throw-type carbon tetrachloride (so-called) fire extinguishers were purchased and were being installed by U.S.E.D. at the Tule Lake, Manzanar and Colorado River projects; Gila River was also planning to use them. This type of extinguisher was of little, if any, value. (See Survey of Fire Protection Problems, under heading "Extinguishers", dated August 21, 1942.) Also at the Tule Lake project, 1-quart carbon tetrachloride extinguishers were supplied in excessive amounts for the type of hazards involved; pump-type extinguishers should have been provided instead. After much discussion and negotiation, the question of glass-throw-type carbon tetrachloride, 1-quart carbon tetrachloride and other type of first-aid extinguishers was finally settled satisfactorily.

Another cause for concern was the water supply for the various projects which, according to the Army agreement, would amount to "100 gallons per capita per day, with sufficient pressure to give adequate fire protection". Therefore any water use above the 100 gallons per capita per day would be drawn from an unspecified fire flow. From the above quotation it would appear that pressure alone would give adequate fire protection, but such is not the case as a residual pressure of not less than 20 pounds per square inch should remain after the domestic consumption and the fire flow have been withdrawn from the water supply system. From the Army agreement the inference could be drawn that they consider 100 gallons per capita per day sufficient to care for both the domestic water supply and fire protection; however, experience on the various projects indicates that this amount does not meet the actual requirements. (See Table A for water requirements in normal cities, comparable in size to the WRA projects.)

On June 21, 1942, the Fire Protection Supervisor recommended certain minimum water requirements for all projects, as shown on Table B. (See "Minimum Requirements for Adequate Fire Protection on WRA Projects, June 21, 1942; also Tables C and D on Precipitation and Temperature.)

Access roads were important to fire protection as some hydrants were being installed in places not accessible in all types of weather, and hydrants would be of little value if not available to pumpint apparatus in case of fire.

Through proper channels, these matters were taken up for clarification. On June 21, 1942, the Fire Protection Supervisor submitted to WCCA an outline of "Minimum Requirements for Adequate Fire Protection in War Relocation Authority Projects", together with a "List of Minor Equipment in Addition to Minimum Requirements for Adequate Fire Protection".

Supplement A of Circular Letter No. 20 of July 1, 1942, signed by Regional Director E. R. Fryer, mentions the agreement with WCCA, and clarifies some of the items mentioned therein.

Supplement C of Circular Letter No. 20, dated July 17, 1942, somewhat clarified the June 8 agreement with the Army, but still left much to the imagination regarding supplemental firefighting equipment

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for the projects. This supplement contains the following two statements regarding the quantity of 2½ inch hose to be provided:

- "1. a. ...These trucks will be equipped with minimum 600 feet of 2½ inch hose" . . and
- "2. c. ...Fire Hose. Sufficient hose should be provided so that, including what is carried on the trucks or engines, minimum 2000 feet of hose is available. Hose to be 2½ inch single jacket, rubber lined, in 50 foot lengths with pin lug couplings."

The different amounts of fire hose (600 feet and 2000 feet) mentioned in Supplement C gave considerable latitude as to what WRA would receive. About July 1, 1942, it was learned that the Army would allow 1000 feet of 2½ inch hose for each fire apparatus, which was only half the quantity needed.

Sixteen thousand feet of 2½ inch hose for WRA was requisitioned. Delivery of this hose was delayed considerably because WPB changed the specifications of hose couplings and the manufacturers had to re-tool before the new couplings could be supplied. However, in due time, the hose was delivered to the six western projects to supplement the fire hose which would be delivered by the U.S.E.D.

During June, 1942, the Fire Protection Supervisor learned that the Los Angeles office of the U.S.E.D. was having six fire engines manufactured at Los Angeles for the Manzanar, Colorado River and Gila River projects. At the first opportunity, he called on the Los Angeles office of the U.S.E.D. regarding this equipment, and since no one in that office was familiar with this type of equipment, they were glad to have an opportunity to discuss the subject. Several errors were found in the specifications, but corrections were not received in time by the manufacturers. The Fire Protection Supervisor was present when three of these fire engines were tested and he was able to prevent acceptance until several important corrections had been made. Before the other three engines were approved for delivery, a WRA representative was in attendance during the tests. However, it was nearly three months after the six fire engines were delivered before nozzles were received to enable the use of 2½ inch hose streams.

Only the Jerome project received the full required allotment of 4,000 feet of hose with the initial equipment from the U.S.E.D. However, no fire engine was delivered to this project until December, 1942, and to date they have not yet received their second fire engine. Nozzles and fittings had to be improvised as none were provided with the fire hose.

The Manzanar project has just received its second fire engine furnished in accordance with the Army agreement, but the Central Utah, Jerome, Colorado River and Gila River projects are each still short one such engine.

The subject of shortage of fire engines at the Colorado River, Gila River, Central Utah and Jerome projects was taken up with the Assistant Secretary of War on June 1, 1943, and the War Department stated that this equipment would be delivered to the projects July 1, 1943.

(See Table E - Status of Equipment)

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In June, 1942, while the Fire Protection Supervisor was at the Tule Lake project where they were having many fires due to faulty installation of heating appliances, an officer from the Portland office of the U.S.E.D. arrived to inspect the project. The purpose of his visit, according to this officer, was to ascertain what construction errors had been made at Tule Lake so as to prevent a repetition of such errors at the Minidoka project, which the U.S.E.D. was to supervise and on which construction had not yet been commenced. The Fire Protection Supervisor accompanied the officer on his inspection and pointed out the defects in relation to the fire protection program, and suggested methods of correction. The inspecting officer assured him that the errors made at Tule Lake would not be repeated at Minidoka. However, many of these same mistakes were repeated at Minidoka, together with some new ones. (See correspondence from War Department, Office of the District Engineer, Portland District, dated Dec. 2, 1942, subject "Fire Prevention, Minidoka War Relocation Area".)

By contacts through proper channels with U.S.E.D., WCCA and contractors, efforts were made to eliminate as many fire hazards as possible while projects were in the construction stage, especially whenever added fire safety could be attained with materials on hand at no additional cost. It is difficult to determine just how effective this practice has been in the elimination of fire hazards, but the fact remains that on projects where considerable work along these lines has been done, there is a definite improvement compared to the first projects constructed where no such work had been attempted.

.....Fire Losses

Despite the many severe handicaps to a successful fire protection program on WRA projects, fire losses on the whole have been surprisingly low. This is undoubtedly largely due to the organizational setup of the Fire Protection Section on the projects, together with the cooperation received from the project administrative staffs and the evacuees.

The two Colorado River project fires (which occurred in March and April 1942), one for \$5300 and the other for \$8000, account for most of the large loss sustained on that project. At Tule Lake, also, most of the loss was in two fires, one for \$4000 and the other for \$1500, both of which occurred early in the program. The causes of these four fires are now being removed, therefore it is hoped that no more large fires will be experienced on these projects.

Fire losses at Minidoka, Central Utah and Granada have been extremely low, but corrections are expected to be made to forestall any larger losses. At Heart Mountain the loss sustained in one fire amounted to \$2500, which also occurred very early in the program. Many of the causes for the higher fire losses at Heart Mountain than at some of the other projects have now been removed. (See Table I for total fire losses.)

Conclusion

Despite the many difficulties in rendering adequate fire protection, it is sincerely hoped that by constant vigilance and continued effort, we shall, when the final word is written, have an enviable record of what can be accomplished with limited materials and facilities.

William E. Hoffman
Fire Protection Adviser