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BRITISH COLUMBIA ELECTRIC RAILWAY CO., LTD.

HASTINGS AND CARRALL STREETS

VANCOUVER, B.C.

OFFICE OF
GENERAL SALES MANAGER

December 28, 1937.

Personal

Alderman H. D. Wilson,
City Hall,
Vancouver, B. C.

Dear Hal:

I am returning the letter from Meteradio Company, Limited, which you handed to me at our Aviation Council meeting on Wednesday morning last, and will discuss this with you further at the first opportunity.

Yours very truly,

W. C. Mainwaring
GENERAL SALES MANAGER.

WCM/K

Operating in BILTMORE HOTEL, LOS ANGELES • OLYMPIC HOTEL, SEATTLE • ST. FRANCIS HOTEL, SAN FRANCISCO • SIR FRANCIS DRAKE HOTEL, SAN FRANCISCO

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~~METERADIO COMPANY, LTD.~~

ELECTRICAL METERED RADIO SYSTEMS

Main Office

621 SOUTH SPRING STREET • SUITE 515

LOS ANGELES, CALIFORNIA

December 16, 1937.

Mr. Halford D. Wilson, Alderman,
City of Vancouver,
British Columbia.

Dear Mr. Wilson:

We are in receipt of your letter requesting information regarding our Meteradio system.

We have turned down numerous opportunities to sell this equipment in the United States, preferring to operate the system ourselves. We would, however, be interested in giving some responsible person or corporation the exclusive rights to this system in Canada. Two years ago the management of the Georgia Hotel in Vancouver endeavored to have us equip their hotel, but we turned the offer down as we felt it was too far away from our home office.

Over a period of four and one-half years, we find that an installation of one hundred radios in a hotel will yield an income of between \$3600 and \$4500 a year.

At the present time we operate in nine hotels on the Pacific Coast, and each hotel averages about the same, although in such hotels as the Biltmore and Drake the average has been higher than quoted above.

An installation of 100 radios will require the services of one good radio man to look after the system and keep the radios in good condition. However, one man can operate two or possibly three hotels - each with 100 radios, if they are located in close proximity. One man could very easily operate an installation in the Georgia and Vancouver hotels, thereby cutting down the operating cost. A percentage of the net revenue is paid the hotel, which is clear profit to them and means a nice revenue without any investment. 100 radios in a good transient hotel should average for the hotel approximately \$1,000 per year.

These radios are designed by our engineers solely for hotel use. Electrical noises usually picked up by the average radio are eliminated. This is an important factor as we have found from experience that the usual hotel is beset

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Mr. Harold B. Wilson
12/16/37

with noises originating within the hotel.

The ideal way to start is to install 100 radios in each hotel, and as business warrants gradually increase this number.

Our price is \$30.00 per radio, f.o.b. Los Angeles, in lots of one hundred. This, of course, includes electrical recording device incorporated in the radio.

We are sure if you should start this system in one good hotel that within a short time you would have the other better hotels asking for the service.

If, upon receipt of this letter, you are desirous of going further into the details of this system, we will gladly give them to you.

Yours very truly,

METERADIO COMPANY LTD.

R.H. Collins

President.

VOLUME 2/33: H.D. WILSON, PAPERS RE: VANCOUVER AIRPORT.

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1310-W-64th, Ave.
Aug. 3rd. 1941.

Alderman H.D. Wilson
City Hall. Vancouver.

Dear Friend,-

Elmer Sly suggested that you might be interested in looking over copies of various reports submitted by myself to the Boeing Aircraft during my transfer to their Plant No. 3 Sea Island.

Attached please find copies as suggested, but as I only made one sketch of the proposed distribution main and hydrant set-up I will have to make another one if you wish to have it. The one I made was turned in with the original report.

I mailed a copy to Mr. Noble in Ottawa since returning to duty on the Fire Department, as I appeared to be getting nowhere as regards getting results from the authorities out here. The chief reason being that no one out there seems to have any knowledge of fire requirements or of fire risks, nor does there appear to be any authority for getting things done without a great deal of red tape.

As regards the suggested Fresh Water main from the city I now understand from Mr. Powell of the Water Board that better pressure and volume might be available than was first figured. Frank.

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FIRE PROTECTION BOEING AIRCRAFT;
PRELIMINARY REPORT ON PLANT NO. 3, SEA ISLAND.
BY CAPTAIN P.F. KNIGHT, V.P.D.

To the Officials
Boeing Aircraft Plant 3,
Sea Island.

June 17th.1941.

Gentlemen,-

In the belief that immediate steps should be taken to provide more adequate firefighting facilities than are at present provided for Plant 3, I beg to submit certain observations and recommendations for your early attention.

I would draw attention to the fact that observations made by myself during my first week's transfer to Plant 3 have been carried out under most adverse conditions, in that the plant construction is incomplete, certain sections are under repair for fire damage, much of the plant equipment is not yet installed, and such production as is taking place does not provide a sufficiently clear picture of the ultimate fire hazard conditions that may exist when production is in full swing.

In view of the above and aside from other recommendations contained in the attached report, I would suggest that an opportunity be provided for myself or some other experienced Fire Department Officer whom you may select, to visit your Seattle plant for a day or two for the purpose of observing conditions and precautions maintained in a similar plant to No. 3 Plant, while under peak production.

Lack of time has prevented a more orderly report and I hope to be excused for breaks in sequence, as my observations are given more or less in the order in which I toured the plant or had certain matters drawn to my attention.

respectfully yours,

P.F. Knight
Captain, V.P.D.

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- (1) Report on survey of Plant 3, re fire protection requirements.

Main Factory Building.- Commencing at Stock Room in N.W. corner, thence south, east, north, and west to encircle plant.

Stock Room.- Adequate protection is ~~provided here~~ but construction work requires ~~that~~ good housekeeping be maintained to prevent accumulations of combustible refuse.
Receipt of or storage of extra hazardous materials in this section might occur, so special extinguisher equipment should be provided in case such condition arises.

Woodworking & Carpenter Shops.-

Provision should be made for removal by vacuum or blower pipes of dust and fine sawdust throughout this section. Present dust accumulations in lumber lofts should be guarded against.
Recommend one 3/8 inch handline installed on railing at top of stairs, for use in sending standpipe hose lines to lumber lofts, Mark "FOR FIRE ONLY".

Plaster Room.- Adequate protection by sprinklers and adjacent stand-pipe.

Lead Room & Foundry.-

Warning signs, re danger of use of water onto molten metal should be posted outside both front and rear doors.
Adequate C.O.2 and C.T.C. extinguishers should be provided when installations are complete.
Asbestos board or other fire guard should be installed at rear of lead pots to protect plywood partition.
In respect to lean-to shed outside rear doorway, - As Rock Gas containers are to be maintained here, the present opening which exposes the windows above this lean-to should be protected by enclosing same with heavy sheet-iron.
A heavy wired front with locking provision should be provided for open front of this lean-to, as a guard against any attempt at sabotage.
Provision will have to be made for storage of extra Rock Gas containers away from main building, as Provincial Fire Marshall allows but two cylinders installed or stored in this lean-to.

Dural Heat-Treat Room.-

Provision should be made for warning signs at conspicuous points re use of water on or near the two super-heated tanks on the west side of this room.
An asbestos or cement guard should be installed part way up the west plywood partition as a precaution against tank spills.
Recommend installation of a ventilating fan high up on south wall to draw off accumulations of heat from these tanks. Hazard here due to extremely high temperatures (950 F) below flat roof, especially during summer weather heat on tarred roof above, will be quite high.
Provide adequate C.O.2 and C.T.C. extinguisher equipment as this section goes into production.

Anodic Room & Laboratory.-

Provide C.O.2 and C.T.C. extinguisher equipment for electrical fires in motor generators and for chemical or laboratory fires.

Cadmium Plating Room.- Provide C.O.2 and C.T.C. equipment for electrical fires and chemical reaction hazards.

Paint Room.- (Primary Finishing) Now being used as temporary Parts Room, Provide adequate C.O.2 and C.T.C. equipment as the occupancy of this room changes.

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Dope Room, - Lacquer thinners, lacquer paints and Toluol hazards here. Probability of "Flash Fires" in and about spray booths. In lieu of "Foamite" which is considered to have detrimental effects on certain materials used in the aircraft industry, I would recommend the installation of adequate fire fighting equipment where conditions warrant the use of foam type extinguisher agent. (Foamite equipment is not considered of value unless at least 75 pounds water pressure is available.) Such pressure is not yet assured on present distributor mains about Plant 5.

Provide C.O.2 and C.T.C. equipment as room comes under production.

See item further on, re inadequate water supply for deluge sprinkler system of this room.

Body Spray Room, - Protection adequate for present.

Planishing Hammer Room, - (Now temporary Office) Protection adequate for present occupancy, but C.O.2 and C.T.C. equipment will be necessary as occupancy changes.

Assembly Section, - Impossible to state at present time as to adequacy of equipment when plant is in full production, but the present occupancy is well protected.

standpipe hose (100') now missing at Section 15.

No sprinkler protection is provided in main factory sections. Such sections may require sprinkler systems as well as fire curtains to hold fire to area involved.

Electric Control Room, - (Elevated, by west stairway to catwalk), - Adequate C.O.2 and C.T.C. equipment should be provided for electrical fires.

Plant employee-training programme should include the allocation of Control Room duties, re cutting off desired circuits in case of trouble or fire.

Catwalk, - Provide four (4) additional C.T.C. extinguishers adjacent to four transformers now unprotected.

Catwalks similar to the present one should be erected in the superstructure on north and south sides of the plant.

Connecting cross-catwalks should be provided for gaining access to fires in superstructure emanating from below or from roof.

At least three (3) iron ladders should be erected on the center posts to provide more ready access to present catwalk.

Similar iron ladders should be installed wherever possible if and when additional catwalks are constructed.

WITH BUT ONE EXIT FROM THE SUPERSTRUCTURE AND CATWALK AS AT PRESENT, there is a grave life hazard to anyone on duty in this part of the building or on the roof. Under existing facilities it would be necessary to travel up to 750 feet along the catwalk to reach the only stairway leading from the superstructure.

In like manner, the same difficulty would be met with if it was found necessary to take hose lines to such areas.

In lieu of standpipes along the catwalks, a number of Soda-Acid extinguishers placed at certain points would be advantageous.

Provide 3/8 inch handlines at several points along catwalk handrail, for speed in raising standpipe hose lines and other fire equipment to this level. Mark "FOR FIRES ONLY".

Air Conditioner Fan Rooms, -

These rooms constitute fire hazard to superstructure and roof, via electrical fires and fires emanating in Paint and Dope rooms directly below.

At present the only entry or exit possible is by short catwalk from low-roof to low-roof, sections 10 to 19. If a fire of any great proportions should bar entry or exit to or from this south catwalk, the only other available point of entry or exit would be through the large air vent openings in the north wall of these rooms directly above the Assembly Floor.

Provision should therefore be made at the earliest possible moment for fighting fires and providing for possible hurried

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evacuations through such vent openings. The only apparently feasible method is by keeping a 48 or 80 foot extension ladder immediately available on the Assembly Room floor below these fan-rooms.

~~It is necessary to enable plant employees and plant firemen to raise this ladder efficiently.~~

As to the rooms themselves, -strict supervision should be maintained to ensure that all openings round blower pipes are sealed, and that required fire dampers are placed in and kept in working order on each of the blower pipes leading to the Paint and Dope Rooms below.

At the time of this inspection no means of entering the rear room of the center fan-room had been provided, the set-up being such that the only means of entry or exit was by climbing over the blower itself.

Provide C.O.2 or G.T.C. equipment in each fan-room adjacent to electric motors.

Roof. - Protection should be provided the large roof areas by extending all standpipes possible to the roof level.

Such standpipes could be of 1 1/2 inch size and either provided with protection against freezing or with facilities for draining in cold weather. Such drain valves could be installed at the lower standpipe connections on the ground floor.

Catwalks should be provided from high-roof to high-roof in order to provide ready means of fighting fire from incendiary bombs or other source and to facilitate regular or intermittent fire or sabotage patrols.

Numerous short ladders will be necessary for gaining access to high-roof catwalks from low-roof positions.

Iron ladders should be erected at suitable points on the outside of this building on the North, South and West sides, and reaching from ground level to roof.

Adequate sand buckets, sand, scoop shovels, hoes etc, should be provided on the roof and about the plant as a protection against incendiary bomb attack.

Plant employees should be given an opportunity to secure latest required information on A.R.P. methods of combating such fires by combining with present plans for auxiliary firefighting lectures.

Present Standpipe Hose. -

All 8 inch standpipe hose in the main factory and Overhaul building appears to be of inferior quality and liable to breakage under but medium pressures.

The first and only standpipe hose tested to date at your plant burst in two places under approximately 65 pounds pressure.

Early attention should be given this matter, as I do not care to proceed with such testing before knowing plans for replacement or exchange for good grade rubber-lined hose.

I would strongly recommend that all present standpipe hose in both large buildings be exchanged for rubber-lined hose.

I have found that deposits of gravel are present in the water mains and standpipe equipment which will continue to give trouble through nozzle plugging until fully flushed by the use of open butt hose lines. Such nozzle plugging destroys the usefulness of hose lines until time is taken to shut the line down, remove the nozzle, drive the firmly lodged stones out of the nozzle, recouple and turn water on again.

The above is further reason for securing early ruling on standpipe hose question.

Boiler House & Pumping Plant. -

Provide C.O.2 and G.T.C. equipment for electrical fires.

I would recommend the installation of fresh water circulating systems on the two auxiliary gasoline engines which act as reserve power for operating fire pump. Such installations are necessary to prevent overheating of these motors as the present system of cooling is by ordinary automobile radiator only. Salt or river water would not be satisfactory for this purpose as the radiator cores would be soon destroyed by its use.

Provide complete asbestos covering for all engine exhaust pipes, as protection for pump operator against serious burns and as a safeguard against fire.

(4) Boiler House cont'd.-

Provide safe means of refilling gasoline tank outside east wall of boiler house, ~~opening sideways.~~ At present the refill bung is not only difficult of access but quite dangerous to refilling, as it is directly below the two exhaust pipes where they exhaust just outside the pump house wall. Any attempt to refill this tank while engines were running would undoubtedly result in injury or fire through exploding gases.

Provide enclosure protection over the two carburetor supply pipes where they emerge from the building and enter the tank pit.

Anyone desirous of sabotaging the auxiliary engines would have little difficulty in destroying their usefulness by simply denting or pulling these feed pipes off.

Overhaul Building.-

Provide adequate wheeled type extinguishers as plant goes into operation.

Provide 5/8 inch handlines on mesanine railing and along catwalk railings for hauling standpipe hose to these areas.

The same recommendations as to catwalks, short roof-ladders, standpipe extension and protection, as well as incendiary fire precautions and outside iron ladders should be applied to this building as were listed for the Main Factory Building.

Hydrant Equipment.-

The present hydrant equipment is quite inadequate, as due to the great distances between hydrants requiring long hose lines, the efficiency of your water system is seriously impaired by friction losses in such long hose lines.

In the knowledge that savings in hose costs will more than compensate for installation costs of additional hydrants, I recommend the provision of three (3) additional hydrants spaced advantageously and at no less a distance than 75 feet from the south wall of the main factory building. These would be in addition to, and installed between the two existing hydrants on the south side of your property and which are approximately 1175 feet apart.

Two additional hydrants should be installed for operations on the Overhaul Building; one on the six inch main at or near the rear center of the building, and one at the N.W. corner of the building. Neither of these hydrants to be less than 75 feet from the building if possible.

I would draw attention to the fact that the present hydrant at the S.W. corner of the Overhaul Building is far too close to such building in event of fire of large proportions at that point. It should therefore be further removed if feasible.

Sprinkler Requirements.-

If and when additional water supply is secured, it may be found necessary or advisable to install further sprinkler systems in the two large buildings, depending on full production conditions.

Immediate Firefighting Equipment.-

In view of the urgent need for adequate protection of this particular war industry I recommend that steps be taken at once to procure modern fire apparatus in the form of a Combination Pump, Hose, and Booster Tank, together with a three section 80 foot Dural metal extension ladder.

Pump should be a two-stage centrifugal capable of delivering 1000 G.P.M. at 150 pounds pump pressure.

Hose box should have capacity for 1500 to 2000 feet 2½ inch hose and approximately 400 feet 1½ inch hose.

Booster tank should be of at least 100 gals. capacity and equipped with not less than 200 feet of booster hose.

The following equipment should also be allotted to this piece of fire apparatus.

- 2 complete loads of 2½ inch hose, approximately 4000 feet.
- 4 shut-off nozzles with 1 inch removable tips.
- 2 nozzle tips, size 1 1/8 inch.
- 2 nozzle tips, size 1½ inch.
- 2 hose holders.
- 1 hose clamp.

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(5) Fire Equipment, cont's.

- 1 hydrant gate valve, 2½ inch.
- 2 reducers, 2½ in. to 2 in.
- 2 reducers, 2½ in. to 1½ in. (If nozzle tip thread is 1½ in, delete)
- 1 water-proof canvas hose box cover.
- 1 crobar.
- 2 fire axes.
- 4 salvage covers.
- 1 C.O.2 extinguisher, 15 lbs size.
- 1 Pump Can, 4 gal capacity.
- 2 C.T.C. extinguishers, 1 Qt. size.
- 2 life lines, 5/4 in. by 100 feet, hemp.
- 6 service belts complete with spanner, independent key, ladder strap, and bucking strap.

Note, - The 700 feet of 2½ inch hose now on hand should be deducted from the above two load requirements.

The hydrant spanners and present open nozzle equipment would form part of the apparatus equipment when received.

At least 500 feet of 1½ in. hose should be provided to allow for replacement when wet.

Water Supply. - In my opinion the present water supply is very inadequate and probably unsuitable for use round a plant of this type, due to the detrimental effects of salt water on certain aircraft material. The salt content of the present Fraser River supply should be tested and reported on by your plant chemists in this regard.

The maximum supply at present being but an estimated 1500 G.P.M., it can be readily seen that even the present sprinkler systems, totaling some 370 heads, could not operate efficiently. These heads would require a minimum of 5500 to 7400 G.P.M. when discharging their necessary 15 to 20 G.P.M. thus leaving the balance of the plant unprotected.

It is to be hoped that no occasion may arise that will require the full 370 heads to function at one and the same time, but ample provision should be made to assure a reserve for such emergency as well as for maintaining required volume and pressures for hose lines from hydrants and standpipes.

Such requirements including future expansion could not be taken care of with less than 4000 to 7000 gallons per minute, preferably at not less than 120 pounds pump pressure.

Suggestions re Water Supply. -

(1) Install two (2) 3000 G.P.M. two-phase centrifugal pumps in pump house near seaplane slip or near present Boiler Room. (Two such pumps are immediately available from the National Harbours Board in Vancouver and would require two (2) 300 H.P. motors to operate.)

Expert opinion obtained, recommends the cutting down of the impellers of these pumps from 24 inches to approximately 21½ inches to accommodate 300 H.P. motors at 1150 R.P.M. Such a set-up would give rated capacity of 3000 G.P.M. at 120 pounds pump pressure on each pump unit.

Distribution mains from such pumps would of course be an engineering problem, but I would urge that negotiations be started at once to determine the possible sharing of water supply and the installation costs with the adjacent Airport Authorities and the Municipalities directly effected.

(2) Install large horseshoe-type feeder main from Fraser River below low-water level, entering the Island east and west of Boeing's Plant 3, and forming loop to include pump connection facilities at various points advantageous to both Airport and Boeing structures.

This again is an engineering problem, but one which has proven of great benefit in New York city along their waterfronts. If the suggestion were to be adopted I would suggest that estimated volume required should not be less than adequate draught for four (4) 1000 G.P.M. fire pumps.

Control valves would necessarily have to be provided on all pumper connection of such feeder main, as at certain periods these connections would have a pressure head due to height of Fraser River above Sea Island.

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(6) Suggestions re Water Supply, cont'd.

~~(a) Provide large fresh water main from Angus and Marine Dr, Vancouver; sharing water supply between plant stations as suggested previously. In event such main were installed, the question of installing hydrants at short intervals should be carefully studied, as such main might not give required pressures on lengthy hose lines.~~

Fire Department,-

After careful consideration I believe Boeing Aircraft and the Airport Authorities would be well advised to investigate the possibility of establishing a Vancouver Fire Department Fire Station on Sea Island adjacent to both plants. Such a set-up operated on a share basis and including fire alarm facilities, trained personnel and greater alarm assignments would be the ideal solution for all parties concerned.

The success of such arrangement would of course depend as well on adequate water supply being provided.

In lieu of establishing such professional firefighting facility on Sea Island I would recommend the setting up of a private Fire Brigade for Boeings Plant No. 3 along the following lines,-

Employ as a Chief, a man having previous firefighting experience and of known ability in the training, organizing and carrying out of modern firefighting procedure in such type industry as Boeing's Plant 3.

Supply monthly salary at prevailing rates, uniform etc.

Provide as a crew for each shift, Two-Platoon or Three-Platoon, men having previous firefighting experience if possible.

At least two experienced drivers (trained pump operators) on each shift and assigned to or near the apparatus at all times.

At least two additional firemen each shift, making total crew on duty at all times of four men.

Any duties other than fire inspection should be in close or easy reach of fire apparatus.

Supply monthly salary at prevailing rates, uniforms etc.

Such Fire Brigade would be augmented in event of alarm of fire by surplus plant Guards or other plant employees trained in auxiliary firefighting.

A Two-Platoon system as above, allowing for 60 hour week as for all B.C. Municipal Fire Departments and including two weeks annual vacation, would operate with 12 men and the Chief.

A Three-Platoon or 8 hour shift system would require more men, but salary might vary and sleeping accommodation would not necessarily need to be provided as in the Two-Platoon system.

Present Urgent Requirements,-

Details as to auxiliary training of plant employees are about fully worked out on paper and within the next few days it is expected that training will commence.

Training of the plant Guards on a more elaborate scale is being handicapped a great deal through lack of proper equipment and hose drying facilities. Pending receipt of certain equipment hereafter listed, any drilling other than mere rudiments of hose laying is practically impossible.

Pending final decision as to the ultimate water supply, type of fire equipment supplied, etc, I would urge the immediate purchase of the following articles. Being standard fire equipment, these articles will be of service irrespective of type of firefighting set-up arrived at and will enable Guards to be of much service in event of fire.

2. Shut-off nozzles with 1 in. removable tips.
2. Hose holders; 6 Bucking straps; 1 Reducer 2½ in to 2 in;
1. Reducer 2½ in to 1½ in. 4. Service belts complete with hose spanners, independent keys, and ladder straps.
1. Double-male reverse coupling 2½ in. 1. Double-female reverse coupling 2½ in. 2. C.T.C. extinguishers and 1. C.O.S extinguisher for present fire truck re auto fires etc.
1. Water proof canvas cover for present hose box.

Facilities for hose drying.

respectfully submitted.

P.P. Enright, Captain V.F.D.

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Fire Protection Boeing Aircraft
Plant No. 3, Sea Island.

June 21st.1941.

To the Officials

Boeing Aircraft Plant No. 3
Sea Island.

Gentlemen,-

Further to my report of June 17th, re protection in
and about Plant No. 3.-

Fire Pump Set-Up.-

Experiments of this date have shown the urgent need for a
"drop in pressure" warning gong or other warning device inside
the Pump Room, on the pressure side of the pump.

Assuming that the electrical power has failed, thereby putting
onus of pump operation entirely upon the two auxiliary engines, it
would at present be necessary to either telephone the engineer on
duty in the pump room or send a messenger to notify him of the
need for starting up the auxiliary engines. This is made necessary
due to the fact that the engineer has no way of knowing that a
hydrant or standpipe is in use except through noticing that the
large electric motor is automatically operating. In event of his
not knowing the electric power was off, he would be quite in the
dark as to drop in pressure in the supply main and which causes
the electric motor to cut-in under normal conditions.

This warning device should have a distinct and readily recog-
nized tone to avoid confusion as between it and the recently
installed telephone gong of the Pump Room. No delay in providing
such warning device should occur.

'Fire Alarm' & 'Fire Out' Signals.- Due to the fact that no automatic
device has been provided for cutting out the electric motor after
it has been set in motion through drop in pressure or otherwise,
and to avoid having the centrifugal pump heat up when hose lines
have been closed down, it will be necessary to provide some means
by which your Fire Officer may notify the engineer that pump pres-
sure is no longer required. Such provision should be included in
any alarm system installed and should be in use so long as the
electric motor or the auxiliary engines do not cut out automati-
cally on a set rise in pressure on the main.

It would be very advantageous to have an alarm signal received
in the Pump Room automatically upon an alarm being given in any
part of the plant. In this way the engineer would be ready for any
emergency and fully aware that water might be used.

Water Supply.- re best method of obtaining.-

As to your request for a definite statement on which of the
suggestions (made by myself in my previous report, June 17th) would
provide the most efficient water supply for Boeing Plant No. 3,
and the Airport Buildings,-

I have no hesitation (aside from the question of using salt
water as per previous report) in recommending suggestion No. 1, re
installation of two 3000 G.P.M. centrifugal pumps.

However, since forwarding my June 17th report I have learned of
additional sprinkler systems to be installed in the Cafeteria, the
Time-clock Office, and the new Administration Office. I have been
informed by the Resident Engineer Mr. Bonnicastle that there is a
possibility that the entire superstructure of Plant 3 may be so
sprinklered as well.

Such systems will provide a further drain on the present or
any future supply system and must be taken into account. Another
point which must be considered is that once an apparently adequate
water supply is provided, the Airport Authorities might naturally
decide to equip their buildings with sprinklers and standpipes.

For this reason the, I would suggest that careful consideration
be given to the installation of distributor mains from the suggested
pumps in order to provide capacity for at least one additional
pump unit should future expansion require further volume.

Suggestion No. 2, re feeder-main for pumps, would require the
immediate attendance of several Fire Department pumps, which distance
precludes; but if such feeder-main were installed in addition to
suggestion No. 1, it would provide a very desirable reserve even if
not of an elaborate nature.

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Suggestion No. 3. re city fresh water main from Angus and Marine, would have as it's principal advantage the securing of fresh water for the Sea Island area. The volume obtainable from such 18 inch main ~~and in no way be considered adequate for firefighting purposes, nor do I consider the pressures obtainable would be satisfactory for use on structures the size of Boeings or the Airport.~~

Maximum volume obtainable, (per Engineer's report) would be from 1350 G.P.M. to 1790 G.P.M. according to the season of year, while pressure obtainable would be approximately 65 pounds at the Airport.

In conclusion I would suggest that provision be made for entry of fire apparatus through the west fence by installing at least one gate near the N.W. corner of Plant 3 main building. If such gate is provided it will allow hose lines to be stretched directly from anticipated hydrants or from fire department pumps operating on the present Canadian Airways Seaplane Slipway to the west of Boeings.

Attached please find specifications for recommended motor driven fire apparatus and equipment, as requested by your Mr. Stephens.

respectfully submitted,

P. H. Knight
.....: Captain V.F.D.

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Specifications re Fire Apparatus
and Equipment, Boeings Plant 3.

Apparatus, Motor Driven,-

Rated capacity..... 1000 G.P.M. at 150 pounds pump pressure.
 Pump.....
 Engine..... V-18.
 B.H.P..... 240.
 H.P. (N.A.C.C.)..... 76.8
 Bore and Stroke..... 4 by 5
 Wheelbase..... 180 inches.
 Width overall..... 96 inches.
 Hose-body capacity.. 1800 feet 2 1/2 inch hose & 200 feet 1 1/2 inch hose.
 Booster hose..... 200 feet 1 inch, 4 ply.
 Suction hose..... 2 lengths, 6 in. by 10 feet, hard.
 2 lengths, 8 in. pony suctions with 2 1/2 in. couplings.
 1 length, 8 in. by 12 feet, soft suction with 6 in.
 female on one end and 4 inch female on other end.
 Water tank..... 100 gal. capacity.
 Ladders..... 1. 14 foot roof, with folding hooks.
 1. 32 foot extension.
 1. 50 extension, three-section preferred.
 Lighting equipment,- 2. headlights.
 2. red parking lights.
 1. searchlight.
 1. rear spotlight.
 1. tail light.
 1. pump gauge light.
 1. Instrument panel lights.
 Warning signals..... 1. Electric, free rolling siren with flashing light.
 Pike pole..... 1. 10 foot.
 Fire axes..... 2. 6 pound P.D. standard.
 Crowbars..... 1. 36 inch drop forged.
 Lanterns..... 1. 2 cell electric hand lamp.
 Hydrant connections.. 1. 6 in. to 2 1/2 in.
 1. 6 in. to 4 in.
 1. 6 in. swivel to two 2 1/2 in. female intakes.
 Extinguishers..... 1. 4 gal Pump Can with 12 feet hose and adjustable
 nozzle.
 1. C.O.2. (15 lbs)
 1. C.T.C. (1 Qt.)

Miscellaneous equipment,-

2. Shut-off nozzles, with 1 1/2 in. tip connections.
 2. nozzle tips, 1 inch.
 2. nozzle tips, 1 1/8 in.
 2. nozzle tips, 1 1/2 in.
 1. shut-off nozzle, 1 in. (Booster)
 1. nozzle tip (Booster) 1/4 in.
 2 reducers, 2 1/2 in. to 2 in. (For standpipe use)
 1. double male, 2 1/2 in.
 1. double female, 2 1/2 in.
 2. hose holders, 2 1/2 in.
 1. hose clamp.
 1. roof roller.
 1. gate valve, 2 1/2 in.
 2. life lines, 3/4 in. by 100 feet. (hemp)
 4. salvage covers.
 1. canvas hose-box cover.
 Fire Hose, etc..... 2900 feet 2 1/2 in. (700 ft. on hand.)
 500 feet 1 1/2 in.
 2. shut-off nozzles, 1 1/2 in. with 1/2 in. tips.
 Mens equipment..... 6. belts complete with hose spanners, bucking straps,
 independent keys, and ladder straps.

P. H. Knight
..... Captain V.F.D.

77/22.

Fire Protection Boeing Plant 3.
and adjacent Airport etc.

July 18th.1941.

To the Officials
Boeing Aircraft
Sea Island.

Gentlemen,-

Further to my recommendations of June 17th and June 21st and in line with suggested protection for adjacent Government controlled Airport buildings as well as Plant 3, I submit the following,-

1) Additional water supply.-

Obtainable from Fraser River by installation of adequate pumping facilities to deliver a further 6000 to 8000 G.P.M. at 120 pounds pump pressure.

Installation of distributor main, (preferably 14 in.) from pump house at rear of present Boiler House, north along westerly fence to cross highway onto Airport property; east along Airport side of highway to opposite Plant 3 easterly fence; south along easterly fence at rear of Overhaul building; west alongside slus and under seaplane slipway to complete loop at pump house.

Leads from such main, to supply hydrants and sprinklers are noted on attached sketch, as also are the required Tees, Elbows, Gate valves, hydrants and pipes.

In regards to hydrants, I would recommend installing "Flush" hydrants wherever interference with movements of planes might occur in the vicinity of the hangars. (3 or possibly 4 points).

Full consideration was given present ground surfaces conditions in laying out proposed course of the distribution main to keep the installation costs to a minimum. All hard surfaced areas are avoided, but I understand work may commence at any time on cementing the present unpaved strip lying between the airport hangars. As an 8 inch lead for two hydrants would traverse this unpaved section I would suggest that precautions should be taken re the laying of this 8 inch lead prior to paving being undertaken.

Provision should also be made for tying-in the proposed higher pressure system with the present installation, so that pressures and volume might be increased on the present main as the occasion warranted, or to supply present main with water in case of breakdown or overhaul of present pumping unit.

I would recommend a change-over for the sprinkler systems from the present to the proposed main, especially as regards the deluge sprinkler system in the Dope and Paint Rooms of Plant 3, as this system requires far more water than the present pump can supply.

An alternative for sprinkler supply would be the construction of an elevated storage tank of approximately 100,000 gall. capacity, at not less than 85 feet in height. Such height would give but nominal pressure of some 37 pounds.

I believe serious consideration should be given to the installation of a "gravity-fed feeder main" from the Fraser River as outlined in my previous reports, as a supply for fire departments pumps.

Due to it's low-water level such main would be especially advantageous in event of air raids and would be practically immune from sabotage efforts.

Fire Department Personnel,-

Although certain rudimentary training is now being given the present Plant 3 Guards in firefighting evolutions, I fail to see how adequate protection can be obtained by endeavoring to consolidate fire and guard duties about Plant 3.

In my opinion such Guards would be even more fully occupied with guard duties in event of fire than they are at present, especially if such fire were set by saboteur in the knowledge that the Guards would be withdrawn from their posts to fight fire.

I therefore urge the setting up of a regular fire department to cater to the needs of of Plant 3 and surrounding properties.

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In event of a Private Fire Department being set up, I would strongly urge great care being taken to select a man for the position of Chief, as such man should be well experienced and thoroughly acquainted with modern firefighting procedure in dealing with fires in structures and materials obtaining in this area.

All other Fire Department personnel should be chosen by the Chief, with at least part of such staff having had previous fire department experience.

Fire Equipment,-

In regards to fire apparatus recommended by myself in previous reports, I find that the type suggested will entail an expenditure of \$ 16,484.00 plus freight west from Toronto.

Hose required and not included in above estimate, based on same grade as the 700 feet now on hand,-

2900 feet 2 1/2" (Outta Perch) at \$66.50 per 100' = \$ 1,928.50
 800 feet 1 1/2" (Outta Perch) at \$46.55 per 100' = \$ 372.40

One 50 foot Dural metal, 3 section extension ladder, also not included in above estimate..... \$ 333.00

Total estimated cost..... \$ 18,978.25

Perusal of estimates supplied your Mr. Stephens will show a saving on above equipment of \$ 2073.00 as compared with cost of the same materials to any Municipal Fire Department. This special War Industry rate allows full requirements at approximately what the motorized apparatus would ordinarily cost alone.

I would seriously consider all phases of the situation before lowering the specifications outlined for your motorized apparatus, as my experience suggests these as required and proper.

I would also suggest careful consideration of any suggestion to reduce the size of the suggested distributor main, i.e. 14 inch, as greatly reduced pressures will result if required volume is supplied through smaller sized pipe.

Miscellaneous,-

Irrespective of whether additional water supply be provided or not, one additional hydrant is required and should be installed as soon as possible on the north side of Plant 3 main building, east of the new Administration Office, alongside the fence separating Boings and the Air Force huts. This hydrant to be supplied by present water main.

Gate valves should be installed outside buildings for shutting off sprinkler systems without the necessity of entering the buildings, as at present. They should be equipped with "Post Indicators".

If immediate steps are not taken to install proposed additional water main, then five (5) additional hydrants should be connected to the present system. If new main is installed these hydrants should be attached to it. In either case these hydrants should be installed as follows,-

1. N.W. corner of Overhaul Building.
2. East side or rear center of Overhaul Building, near fence.
3. 4. & 5. South side of Main building Plant 3.

Standpipe hose,-

I would again recommend the exchange of all present 2 inch standpipe (unlined linen) hose and hose reels, for rubber lined hose and hose racks.

By the use of 2 in. to 1 1/2 in. reducers on all standpipes, and the use of 1 1/2 in. hose as replacement for the present 2 in. hose a much more efficient system would result. Nozzles would also require exchanging, 2 in. for 1 1/2 in. and preferably of shut-off type.

Ropes,- As a means of raising hose lines quickly to superstructure and catwalks the following ropes should be immediately supplied and installed, together with "For Fire Only" signs,-

1. In lumber loft, Plant 3. size ... 3/8 in. by 35 feet.
7. On catwalk... .. 3. 3/8 in. by 50 feet.
3. In fan rooms, (Rescue)... 3/4 in. by 50 feet.
4. On catwalk, Overhaul building. 3/8 in. by 50 feet.
1. On mezzanine railing, Overhaul building. 3/8 in. by 35 feet.

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Internal Ladders.- Additional ladder access should be immediately installed on center posts of Plant 3 to allow quick access to the catwalk or hurried exit from such area in case of fire.

External Ladders.- Too much stress cannot be placed on the need for outside ladders and roof catwalks on both Plant 3 and Overhaul buildings. These should be provided at once.

Fire Alarm System.- Immediate consideration should be given to the installation of a suitable alarm system throughout the area, otherwise damage of a serious nature may result, even to the loss of these valuable and necessary structures, through delay in calling the required fire fighting equipment.

Authorizing Requirements.-

In the knowledge that certain of my recommendations will entail large expenditures and necessarily take considerable time to have endorsed by Dominion Government and Airport Authorities, and as a result of my observations as to what is immediately in need of attention, I would urge that authorization be given some competent person to have certain of these matters attended to immediately.

The following list comprises items which I consider are but minor details insofar as expenditures are concerned, yet are of utmost importance from a fire prevention or extinguishment standpoint.

These items must eventually be taken care of regardless of whether more adequate water supply, fire apparatus, or fire department is endorsed, as I see no reason why they should not be attended to at once.

1. Secure fire extinguisher equipment as plant conditions warrant.
2. Secure and install ropes and "For Fire Only" signs where needed.
3. Secure and install "Use No Water" signs where required.
4. Have asbestos fire guard board installed in Lead Room.
5. Have required ladders erected on center posts of Main Building.
6. Have outside ladders erected to roof of both large buildings.
7. Have gate valves installed for outside control of all sprinklers.
8. Secure data re costs of altering standpipe hose equipment.
9. Secure data re costs of extending all standpipes to roof level.
10. Secure and install necessary sand, sand pails, etc for controlling roof and incendiary bomb fires.
11. Have "Drop in pressure" signal installed on pressure side of present fire pump unit.
12. Have catwalks constructed and installed on all high roof bays.
13. Have necessary short ladders made and installed on low roofs.
14. Secure additional fire hose equipment for present fire truck.
15. Secure and install as regular equipment on fire apparatus, one Fog Nozzle assembly.
16. Have hose drying facilities installed.
17. Secure plans and estimates on adequate fire alarm system.
18. Install temporary fire alarm system in Boiler House to allow Engineer to give immediate fire alarm signal on steam whistle.
19. Have gate installed in west fence as suggested.
20. Arrange for outside storage of dirty wiper rags while awaiting laundry pick-up.
21. Secure estimates on fire protection installation for Paint Storage building.
22. Have sabotage guard constructed over gasoline tank and engine feed pipes outside Boiler House east wall.
23. Have refill bung of gasoline storage tank extended sideways as recommended.
24. Provide more adequate spark arrester and needed repairs on present refuse incinerator.
25. Have heavy wired, sliding front installed on Rock Gas shed, together with locking device.
26. Have present accumulations of hay at south and west sides of plant cut and removed.
27. Provide suitable storage shed for spare Rock Gas cylinders.
28. Have sectional blue prints made and posted throughout plant, showing the number and location of fire equipment, together with names of employees detailed for duty at each station.
29. Inaugurate employee fire drill.
30. Secure required forms for reporting fires, etc, about plant.

Attached please find estimated costs and list of materials required for installation of proposed water main, hydrants, etc.

respectfully submitted.

P. H. Knight
..... Captain, V.F.D.

17/14

Data re Installation of Additional Water Supply
Boeing Plant 3, and Airport Area.

Estimates on cost are based on figures supplied by Barr & Anderson Co. and are for "material installed" in all cases. Installations where other than ordinary earth surfaces are met with would increase cost accordingly.

Installations per accompanying sketch provide means of avoiding hard or cement surfaced areas and measurements although being approximate should be well within actual measurements encountered when installation takes place.

Although a 14 inch main is recommended as a feeder, the following data includes estimate etc, re a 12 inch installation if deemed sufficient.

14 inch.		12 inch.	
14" pipe.....	5100 ft. @ \$580.00 per 100=	\$29,580.00	
12" pipe.....	1000 ft. @ \$450.00 per 100=	4,500.00	5100 ft = \$ 22,950.00
10" pipe.....	250 ft. @ \$355.00 per 100=	887.50	1250 ft = 4,187.50
8" pipe.....	650 ft. @ \$265.00 per 100=	1,722.50	650 ft = 1,722.50
6" pipe.....	150 ft. @ \$190.00 per 100=	285.00	150 ft = 285.00
14" Elbs....	6 @ \$80.00.....	480.00	12" 6 @ \$45. 270.00
12" Elbs....	1 @ \$43.00.....	43.00	10" 1 @ \$32. 32.00
14" Tees.....	15 @ \$112.00.....	1,680.00	12" 15 @ \$57. 855.00
12" Tees.....	5 @ \$57.00.....	285.00	10" 5 @ \$48. 240.00
10" Tees.....	1 @ \$48.00.....	48.00	8" 4 @ \$31. 124.00
8" Tees.....	4 @ \$31.00.....	124.00	
14" Gate valves.....	2 @ \$200.00.....	400.00	12" 2 @ \$140. 280.00
8" Gate valves.....	3 @ \$65.00.....	195.00	8" 3 @ \$65. 195.00
6" Gate valves.....	15 @ \$41.00.....	615.00	6" 15 @ \$41. 615.00
Ordinary Hydrants...	10 @ \$106.00.....	1,060.00	10 @ \$106... 1,060.00
Flush Hydrants.....	3 @ \$106.00.....	318.00	3 @ \$106... 318.00
6" Gate valves re sprinkler controls	5 @ \$41.00.....	205.00	5 @ \$41.... 205.00
Post Indicators..	7 @ \$48.00.....	336.00	7 @ \$48.... 336.00
		\$42,714.00	\$ 33,711.00

Proposed Fire Apparatus estimate \$18,978.25 \$ 18,978.25

Pumping equipment transferred from National Harbours Board, plus cost of overhaul and installation,

per P.F. Enright, Captain V.F.D.

July 12th, 1941.

11/10

Water Pressures Obtainable
Boeing Plant No. 3, Sea Island.

per P.F. Enright, Captain
V.F.D.

To the Officials
Boeing Aircraft
Sea Island.

Gentlemen,-

Herewith please find particulars as to various hose lay-outs tested for effectiveness of fire streams, together with the Pitot Gauge pressure readings obtained while using 1 1/8 inch shut-off nozzles.

<u>Test No. 1.</u>	Hydrant S.W. corner Plant 3.	Nozzle Pressure
	One line 2 1/2" hose 100 feet in length.....	61 lbs
	Two lines 2 1/2" hose 100 feet in length.....	61 61 ..

Test No. 2. Hydrant as above, with hose and nozzle lay-out the same as Test No. 1, plus Hydrant S.W. corner Overhaul Building (1175 feet distant from first hydrant)
150 ft. 2 1/2" hose on ground level.
350 ft. 2 1/2" hose elevated to Overhaul roof, approximately 50 feet.

Notes re Test No. 2.-

With the above four (4) lines operating, the pressure reading on Overhaul roof nozzle was but..... 21 lbs

With one line from first hydrant closed down, leaving one 100 ft., one 150 ft., and one 350 ft line operating, the pressure reading on Overhaul roof was but.. 22 ..

With both lines from first hydrant closed down, leaving only the 150 ft and 350 ft lines operating, the pressure reading on Overhaul roof was but..... 23 ..

With but the single line of 350 ft. operating on Overhaul roof, the pressure reading was still but..... 23 ..

Test No. 3. Hydrants and hose lay-outs the same as Test No. 2, except that the 350 ft. line was lowered to have all nozzles operating on ground level.

Notes re Test No. 3,-

With four lines operating the pressures obtained on lines laid from the Overhaul hydrant were,-

On the 150 ft. line.....	46 lbs
On the 350 ft. line.....	39 ...

With one of the 100 ft lines from first hydrant closed down, leaving three lines operating, there was no apparent rise in pressure on the two lines at the Overhaul building..... 46 39 ..

With the 150 ft. line closed down, leaving two 100' lines operating from first hydrant and the 350 ft line operating at Overhaul building, the 350 line had 40 ..

With but one of the 100 ftl lines operating on first hydrant the 350 ft line reading was still but..... 40 ..

With the 350 Ft. line operating alone at the Overhaul hydrant the pressure reading was still but..... 40 ..

Conclusions,-

From the above readings it would appear that the present pump with a peak pump pressure of about 92 pounds cannot be expected to supply hydrant pressures that will give adequate nozzle pressures

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(8)

on hose lines of the necessary length for fighting fires in or near
~~the roof of either Plant 3 or the overhaul building, except nozzles~~
on ground level.

The effective reach of such streams as were obtained would barely throw water from the ground level to the roof level and that only on the shorter hose lines.

The pressures obtained on the Overhaul roof have an effective reach of from 36 to 40 feet only, and can in no manner be considered of value in or about structures such as the Boeing Plant.

It has been my contention ever since my first or preliminary survey of Plant 3 that 90 pounds pump pressure could not give the necessary protection to your property, owing to friction loss in the rather small sized distributor mains and the much greater friction loss occasioned through lengthy hose lines and height of buildings.

I would suggest therefore, and in view of my having recommended an additional water supply at 125 pounds pump pressure, that arrangements be made to have Mr. Dowling of the Fire Underwriters make a thorough test of the present system's capabilities, and that such test be made as soon as possible.

A test by such an authority should go a long way towards clarifying a dangerous situation, for in my opinion the present inadequate water main and hydrant installations are responsible for a false security which may result in an attempt being made to control fires that are beyond the capacity and ability of the more or less untrained Firemen-Guards and the water system itself.

respectfully submitted,

P. A. Enright
..... Captain V.F.D.

Air Mail

37/3

Vancouver Airport - Operation and Administration now in hands of Department of Transport. - Squadrons of fighter aircraft now based there. Boeing Aircraft, Coates, Ltd., and Canadian Wright Engines, ^{Ltd.} factories and overhaul works located at Airport.

Vancouver Airport is located on Sea Island, fronting on the Middle Arm of the Fraser River. Island is protected by 6 foot high dyke. At high tides the river level is higher than the runways.

Japanese colony located within 1 mile of westerly boundary of the Airport. The dyke runs through this colony.

There is no military guard ~~at~~ ^{at} Airport, except small R.C.A.F. guard at hangars and Boeing guards at factory.

The dyke offers "wide-open" opportunity for sabotage, especially on foggy nights. Suggest a survey of the

situation should be made immediately by Military Authorities.

*Mysterious warning
has been received by
telephone predicting trouble.*

SOCIAL SERVICES COMMITTEE

Monday, January 12th, 1948
at 10.00 a.m.

A G E N D A

1. Adoption of Minutes of Meeting held on December 22nd, 1941.

2. Delegations.

Communications:

From

Subject

- | | |
|--|---|
| 3. Medical Health Officer | Sewer Connection: 4568 Henry Street. |
| 4. Medical Health Officer | Routine Reports re (a) Communicable Diseases; (b) Morgue. |
| 5. Medical Health Officer | Miss E. C. McGuire. |
| 6. Social Service Administrator | Report for Month of December, 1941. |
| 7. Social Service Administrator | Miss Mona Shearer. |
| 8. Social Service Administrator | Glasses for Relief Recipients. |
| 9. Re-appointment of Special Committees. | |
| 10. Kiwanis Club of Vancouver | Application for authority to raise money for the Vancouver Lord Mayor's Fund for the relief of Air Raid Victims |
| 11. Accounts for approval. | |