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Sea-Tac Community Plan Transcript - T.V. Program

Pat: Hello. Welcome to my home. My name is Pat Ashcroft and I live in Zone 3. This is the area designated by the Federal Aviation Administration as the high impact noise area around the Seattle-Tacoma International Airport. They are not wrong. It is very noisy here. We not only have the aircraft noise, we have vehicular noise from Highway 99 on the west, and I-5 on the east. Added together, this noise makes it almost impossible for us to enjoy our home as others inside in quieter areas do. We cannot use our sun deck. We cannot entertain in the evening; have backyard barbecues. The noise interrupts our T.V. watching, our telephone calls, and our sleep. It is extremely noisy here.

Noise is a problem in other areas, too. One reason is the increase in population. More people, more cars (they have doubled in the last twenty years), more airplanes (they have risen three to four percent). Also, our standard of living has raised. This means more appliances in the home, more motor boats, motor bikes. People are just now beginning to realize that noise is a problem. In fact, the Environmental Protection Agency recently stated, "Whereas noise levels sufficient to induce some hearing loss were once confined to factories and occupational situations, noise level approaching such intensity and duration are today being recorded on city streets and, in some cases, in and around the home." Various organizations are working to alleviate the noise problem, making quieter mufflers, quieter airplane engines, but this is a long-range program.

In recognition of this problem, the Port of Seattle and King County is sponsoring a Sea-Tac Community Plan. The purpose of this program is to show you just one of the studies that is going on to help alleviate our noise problem. We will start this with Roy Richards from Robin M. Towne & Associates in Seattle and we are discussing the noise problem in the Sea-Tac area.

Roy: Hi. Thank you, Pat. I think you have some questions for me. First we have a delay, I think. (Plane)

Pat: That's the problem, right there.

Now that that's over, what is the purpose of the noise study around the Sea-Tac International Airport?

Roy: Well, I think there are really two purposes. One is to carefully document or measure the extent of the noise impact in the Sea-Tac community. And the second purpose is to provide a planning tool for the Port of Seattle and for King County so that they can sensibly plan the design of facilities and land use planning for the future.

Pat: Other noise studies have been made ---------- by the Federal Aviation Administration ----------. How does your study differ from these?

Roy: I'll answer in a minute. (Plane)

Well, I think our study is different, certainly not in quality, but rather in ~~expense~~ EXTENT. This is a much more comprehensive study than has been done and we think the magnitude of the problem warrants this kind of study. We're making measurements at many more locations than have been done in the past and we're using a different and more sophisticated noise descriptor which is something that I'll define a little later. There are other studies going on now. Our firm is involved in a study right here at Sunset Junior High School, determining what architectural treatments are required to reduce the noise level to acceptable volume inside a classroom.

Pat: How do you choose your testing sites and does the Federal, the airport, know where they are?

Roy: Well, they're selected (here we go again) (plane).

Pat: There certainly does seem to be a problem.

Roy: I would say so. We're having a little bit of speech interference here. Let me first say that the geographically the study area is about a mile on either side of the airport and five or six miles south and the same distance to the north and this encompasses almost 50 sq. miles altogether and in this study area we will be making measurements at about 66 locations and we're going to measure a total 4200 events, an event being either an aircraft takeoff or a landing. And so we're selecting our sites on a kind of a grid pattern over this whole study area and the sites also have to be free of other noise sources.

Pat: How does a monitoring site operate?

Roy: Well, we operate basically by recording the noise on a magnetic tape so that we can analyze it later when we take it back to our laboratory. The instruments involved this is a sound level meter here. We're using it as a microphone. The microphone actually is up in the pack, contained inside of that plastic foam ball which is a wind-screen to reduce the effects of wind noise on the recording. But this is(n't)? the microphone. It converts the noise signal coming from the aircraft into an electricl signal with the same characteristics and then that goes back through the cable here on the ground through the tape recorder which is shown here. This is a, a, a, uh, Sony modified Sony unit. We've modified it especially for taking acoustical data.

The tape is calibrated before we start the recording and then an event being a take-off or a landing recorded on the tape and then we take this During the event we also take a picture of the aircraft so that we can determine both identify the type and the distance. This enables us to determine the distance accurately to the aircraft from the measurement location. Then this tape is taken back to our laboratory where we it is reduced to generate the numbers that we use in preparing the noise level contours.

(Plane)

Pat: Now we will go with Roy to the office of Robin M. Towne & Associates in the Seattle office.

Roy: This is the instrumentation that is used for playing the tapes back. In fact, this tape that I brought in is one that was made in the field recently and I'll put it on the machine now. This instrument that I'm putting it on is a tape recorder of the same type that we're using to record the noise data in the field. Here it's being used in the playback mode. We're playing the tape back into this instrument here, which is real time frequency, 1/3-octave band analyzer. What this does is divide the noise signal, the aircraft noise signal, into 1/3-octave bands and there are about 25 such bands throughout the frequency range of interest. Then every half-second the sound pressure level, the noise level within this 1/3-octave band is read by this instrument. It's digitized or changed into numbers and by this instrument down here, which is a coupler, and that digital information is put on another magnetic tape up here which is called an instrumental tape recorder, digital tape recorder, and then these tapes are then taken to a large computer facility where the noise descriptor that we talked about earlier is calculated. Why don't I run through a typical noise reduction of an

event and we can see how this equipment operates. We'll hear the noise played back on the receivers in the background. You see, every half-second the screen blanks out. During that blank out, the information is going onto the tape over here.

Pat: Very complicated.

Roy: Well, it's a sophisticated instrument.

Pat: You don't actually take all this equipment out in the field?

Roy: No. Actually, none of this equipment goes out in the field. We might use this recorder in the field but all of this equipment stays here. It will be used only in this location. And the Now this operation will be repeated for all of the 4200 events that we will record and there obviously will be a great deal of information contained on these tapes that then goes for further computer processing.

Pat: Then this is the end product, the tape that you were speaking of earlier.

Roy: It's the end product as far as the data reduction is concerned, that's right. The end product is really what comes out of the computer and even beyond that then there's the job of interpreting the data and finally developing the noise contours. And the usable results are studied.

Pat: I see. (Plane)

Roy: This is where it goes--into the airport. We're getting totally out of the 4200

events that we intend to measure there will be about an equal number of takeoffs and landings and about an equal number of north and south of the airport.

Pat: And you did take these reels at Mike Olson's?

Roy: We have taken some tonight. If fact, we have already completed six in 24 hours, full 24-hour recordings and there will be some additional acquisitions. We prefer day measurements bacause we get some additional information. Our photo ranging technique requires daylight. We actually take a picture of the aircraft so that we can determine just how far it is from the measurment site.

Pat: Earlier you mentioned a noise descriptor. What do you mean by that and what does it show?

Roy: You see, the noise measurements that we're making in the field are what we call physical measurements. The aircraft produces a certain noise level and what we record at the measurement site is a function of how much noise is being produced by the aircraft and how far away we are. This is still what we call a physical measurement. It's the characteristics of the noise as measured by instruments. What we are ultimately interested in is the impact of this noise on people. How this affects their living standards, you know, their ability to sleep, to converse, and this type of thing. So the function of a descriptor, of a noise descriptor, is to take the physical data that we have and convert it into a scale which relates to impact on people. Back here, for example is a table that we have prepared of noise levels for various types of common noise sources. And in this case the descriptor is an A-rated decibel. The symbol for that is BBA. Now this number is a little bit different from the descriptor that I said

DbA

we were using, the effect of perceived noise level. But they both serve the same function - to try and convert or adjust our physical measurement into a measure which better describes the impact on people. In this case, the noise levels that we are measuring at Sea-Tac are in the range of the highest level or about 100 BBA up here and the lowest ones, out on the fringes of the study area, will be down here at about 60. The total range here from a sound pressure level of zero, which represents the threshhold of our ability, runs up to 130 ~~BBA~~ at the top which represents the threshhold of peak. And in between that is the noise level that we are exposed to in everyday living. This region down here where its background is blue represents a very quiet noise environment and probably nothing in that range will we find around Sea-Tac.

Pat: (Laugh) I don't think so.

Roy: In the yellow range here, in the mid-range, where most of us spend our lives and unfortunately in the Sea-Tac area we're up at the top end of that range and even getting into the red range up here above 90 or 100 ~~BBA~~'s where noise actually can become harmful to the hearing. You can see the threshhold of hearing damage right here. Now that's based on Dept. of Labor standards, OSHA standards, and implies an 8-hour, continuous exposure to the noise. Now, of course, we don't have a continuous exposure to aircraft noises. It's an intermittent type of exposure, so from the standpoint of hearing damage, the level would have to be quite a bit higher than 90 but ...

Pat: How about emotional damage; that can be right about 90.

Roy: Or even less. Wherever there is annoyance from the noise, and this can be caused

at much lower levels than 90 certainly. In fact, it's possible to be annoyed at levels way down in the 30 and 40 region. The classic example of that is the dripping water faucet at night. You know, with so little acoustic energy you're barely able to measure, yet this can be a very annoying thing. It can interfere with our sleep and anything that causes annoyance or interference with sleeping or conversation and the resulting annoyance from that certainly can't be described as conducive to good mental health.

Pat: Are you going to do any study on vehicular traffic and noise?

Roy: Yes, there will be measurements made of surface noise at 15 locations in the study area and these locations will range fall the way from, well, you might say maximum exposure conditions close to I-5, the freeway, to minimum exposure conditions which might occur in the semi-rural areas found in some of the southern parts of the study area or in some of the park regions where there are no close highways or arterials. So, we will have data on typical background or surface noise characteristics that will help to evaluate the total noise problem.

Pat: What ultimately happens to this data when you're through with it, then what happens to it?

Roy: Well, we'll produce noise level contours. They're following a system developed for the FAA called Noise Exposure Forecast or NEF for short and one important difference is that we are incorporating into the study is that instead of using standard aircraft performance noise data, we are using the actual noise measurements so that if there is anything unique in the Sea-Tac operation our noise measurements will include this and so from a combination of the noise measurements in this NEF methodology, we can

generate zones of varying degrees of impact, kind of following the same type of thing we have now, in which there is a Zone 2 and a Zone 3, except that these zones that we have now are not based on any actual measurements. They are what you might call ----------type calculations. They are not very accurate and we think that for the kind of solutions that are going to be required here, whether its the acquisition of property or damage payments or whatever, a much more accurate definition of the impact zone is required. That's really one of the basic purposes of the study - to provide this kind of definition.

Pat: Well, actually, are there any options that people can have now to reduce the noise in the area, or is it just a, I mean, short of wearing earplugs all the time?

Roy: Well, uh, I doubt that right at the present time there isn't very much that can be done uh, I mean, uh, things that are going to reduce the noise are going to be changes in operational procedures, uh, to reduce the noise impact and just what these procedures will be will best be determined after the study if finished so that we can look at the effects of eliminating all nighttime operations, for example. How this reduces the impact zone. Or we can look at the effect of the two segment approach, where the aircraft approaches initially at 6° and then goes into a 3° approach. This helps reduce the noise further out in the 6° segment although it has the disadvantage of perhaps producing a little more noise in the transition from the 6° to the 3°. There are possible retrospect programs where existing noisy aircraft, the 707 and DC-8 class of the engines will be fitted with noise attenuating devices. This is something that is being investigated now and it's possible to get reduction from that, but it's probably not going to be a very speedy process.

Pat: Then that will be a long-term solution?

Roy: Several years certainly, you know, before there would be, I think, any significant changes from that type of program.

Pat: Do you think you're going to find that this area is definitely uninhabitable for regular residential use?

Roy: I think there's no question but what there will be a hard core area, in close to the airport, particularly in the ends, the north and south ends where it will not certainly is not suitable for residential uses and where there are residences now. So, I think it will be a program of acquiring property there. In fact, I think this program is already underway. There have been some properties acquired and there will be more. Just how far this will extend will be one of the outputs of the study. Then there will be a fringe area in which probably total acquisition will not be the solution but some other type of program of noise reduction or conversion to other land uses. This is really probably the most difficult part of the study is determining this fringe area; just where the limits should be there and what kind of solutions will apply there. Further out, well, way out from the airport, probably nothing will be done and then very close it will probably be a complete change to another land use. The tough part is going to be this fringe area, intermediate area.

Pat: How close is this fringe area? Can you give an estimate of this, from the airport?

Roy: Well, I'd rather not now, but it will probably follow approximately the limits of Zone 3 as we have it at the present time. Although we're really not sure of that until we

finish the study. I mean, these limits are going to be defined by the measurements and our measurement program is, we're only about a third of the way through it.

Pat: How effective is the soundproofing of buildings to noise abatement? Does that solve the problem?

Roy: Well, I can certainly solve the problem for the occupants inside the building and for office buildings or schools, at least most school activities or buildings where most of the activities are inside, that is probably a good solution. Where there is any outside living or activity, then, of course, that doesn't solve the problem at all. And for residences, single-family residences and garden-type apartments, where there usually is quite a bit of outside activity, particularly in the summer months, that is obviously not a solution.

Pat: The noise is still there?

Roy: The noise is still there, that's right.

Pat: It sounds like you're going into a very comprehensive study. Solving problems.

Roy: That is the intention. It is a complete study so at the end of this we will have a good planning tool, and some quite sensible and correct decisions can be made in attempting to solve the problems.

Pat: I have learned a lot about the noise quality study that the Port of Seattle and King County is sponsoring while working on this television program. I personally be-

lieve the methods they are using are sophisticated and everyone that I have come in contact with is extremely sincere. The computer tapes prepared by Robin M. Towne & Associates are being analyzed by Man/Acoustics, another Seattle noise consultant firm. This analysis will interpret how these noise levels affect people. A preliminary report on the result of the noise quality study will be used by the County, the Port and citizens to prepare a plan to implement measures to improve the situation around the airport. The results of this study will be available in layman's language at the Sea-Tac Community Plan office at 253 So. 152nd Street, in Burien, about the end of November. Citizen involvement and participation is an effective tool. Please stop by and help us. We want and need your help.

The End.